

REVIEWS: EXTREMEPRO • CHARACTERS VOLS. 1 & 2 • SNAPSHOT

NEW TECHNIQUES

SPECIAL
TITANIC
COLLECTOR'S
EDITION

FOR LIGHTWAVE 3D & VIDEO TOASTER/FLYER USERS



December 1997



VISIONS OF THE UNSINKABLE

DIGITAL DOMAIN'S LIGHTWAVE
ARTISTRY HITS THE WATER

U.S. \$6.95 CAN \$7.95

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Oris Colleg
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Circle #212

Electrifying

new plug-ins for LightWave 3D.

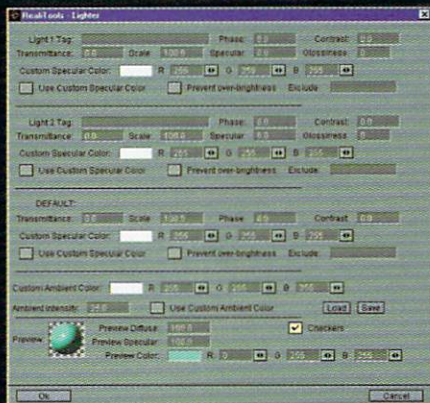
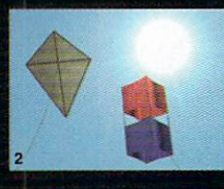


RealTools

FRACTALIZER

Find out why the critics are raving about RealTools, new from Dynamic Realities! This collection of sixteen plug-ins for LightWave 3D is sure to have a utility that you've been waiting for. We believe pictures are worth more than words, so we've only listed a few of the terrific features of RealTools here. Some of the most popular include:

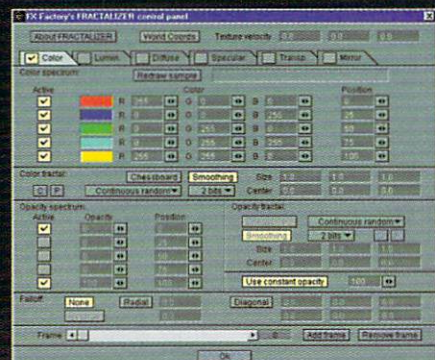
- **Soft Reflections** - A shader that allows more realistic blending of shadows and can change a surface's reflectivity and transparency based on the brightness of the reflection. There is also a distance falloff option. Images 1 and 4 are examples of this.
- **Shadow Blend** - Ease the frustrations of compositing! This plug-in eliminates the need for front-projection mapping for shadows in CGIs.
- **Lighter** - One of the most advanced lighting engines for LightWave available! It allows selective inclusion and exclusion of lights, phase shifting the light, and changing the contrast of the surface's terminator. You can also have a surface "transmit" light, like the kites in image 2.
- **Fresnel Shader** - Controls for contrast and bias, surface modifications, and value limiting give this Fresnel shader the ability to create some of the most sophisticated effects ever seen. And as a bonus, you can create ink or pencil drawn effects, with varying width and shading, as in image 3.
- **Pencil Shader** - This shader adds custom lines over the top of an image for a result resembling hand drawn artwork. You can mix lined and regular objects in a scene, customize how sharply the lines fall off, where they fall on the surface, and even apply a custom, ambient color! You can apply this plug-in to any image, not just LightWave images!



Surfaces, surfaces, and more surfaces! Fractalizer, new from Dynamic Realities, is a fractal noise plug-in that replaces LightWave's Fractal Noise shader. This plug-in offers superior controls, morphing, and more! Some of the features include:

- **Five Color Spectrum**: Allows easy and intuitive changing of the cloud size and the contrast between multiple colors. By applying the spectrum, animators can obtain the effect of electric sparks.
- **Radial Falloff**: The effect can be specified to disappear along the radius.
- **Fractal Opacity**: This feature makes it possible to put the fractal in a precisely defined area on the object. You can obtain many unique effects, like a burned-out hole, by applying Fractal Opacity with Fractal Morphing.
- **Fractal Morphing**: Allows obtaining the effect of a changing color or texture without tedious object-by-object morphing. The possibility of changing each parameter gives the animator full control over the texture morphing.
- **Keyframeable**: All effects and controls are keyframeable for smooth morphs and gradual changes over time.

For super surfaces that can take on the look you want (and then change again and again!), you need Fractalizer. Available just in time for the holidays, contact your favorite LightWave 3D reseller or Dynamic Realities today.



All platforms
available as of
12-1-97 on CD-ROM.
Compatible with
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Estimated Street Prices of
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Intel	\$150.00
Alpha	\$250.00
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Sun	\$750.00



Also available from the LightWave 3D plug-in experts: Particle Storm, Lock & Key, ShaderMan, Stripper, and Movie Models Aviation CD.

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NewTekNIQUES

C O N T E N T S

Volume 1, No. 4, December/January 1998



COVER STORY

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Visions of the
Unsinkable

by Dick De Jong
and Molly Dinkins



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This month's cover is a combination of live-action and CGI. LightWave portions of the shot include the hull and water created by Digital Domain animators on DEC Alpha-based Carrera computers.

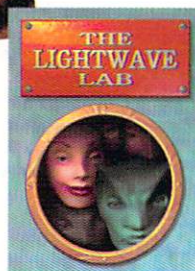
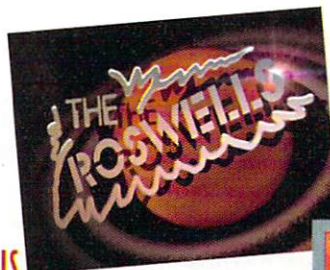
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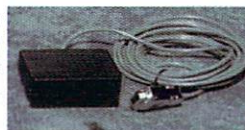
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TekTALK

OUR EDITOR'S OPINIONS ON IMPORTANT NEWTEK ISSUES

BY JOE TRACY

Stand strong: Don't let anyone or anything sink your dreams!

Titanic Visions SOME DREAMS ARE UNSINKABLE

On April 10, 1912, a woman boarding the Titanic asked a crew member, "Is this ship really unsinkable?" The crew member responded, "Lady, God Himself could not sink this ship." It was with that type of security and reassurance that 2,227 people boarded the Titanic for its maiden voyage from Southampton to New York. Yet only 705 reached their destination—on another ship.

News of Titanic's fateful collision with an iceberg shocked the world. After all, this was not just any ordinary ship. It was the largest and grandest ship ever built. It was the safest ship ever built. The first class passengers alone had a combined worth of more than \$500 million! And this was in 1912.

Well-known millionaire Col. John Jacob Astor was onboard the Titanic when it sank. So was President Taft's military aide, Mr. Archibald Butt. Even the owners of Macy's, Mr. and Mrs. Strauss, were passengers. As women and children were being loaded onto lifeboats, Mrs. Strauss was asked to join them. She refused, stating "I will not be separated from my husband. As we have lived, so will we die together." They did die together, as did Astor and Butt. Altogether, 1,522 met their fate in the icy waters that swallowed the "unsinkable" Titanic.

James Cameron's *Titanic*

James Cameron has brought the Titanic tragedy to life with his three-hour epic story, *Titanic*. But he didn't want it to be another story about a ship like other Titanic movies were. Cameron wanted *Titanic* to be about people, in particular a couple, and he wanted the moviegoers to feel like they were onboard. To help achieve that feeling, Cameron was insistent that effects, including digital people, were realistic down to every minute detail.

The Oscar Challenge

Helping to bring the Titanic disaster back to life was Digital Domain's LightWave NT Team (see feature story, page 22), among others. The job that all the effects artists did is so amazing that trying to spot

an effect in the movie will be nearly impossible. In fact, Digital Domain's strongest challenge with *Titanic* now is convincing the Oscar committee that there were effects used in the film!

NewTek's *Titanic* Coverage

In this issue of *NewTekniques* we bring a few of the LightWave-assisted effects to life for you (in the cover story and departments such as "WaveFX" and "TekMasters"). We've also included information on how NewTek's Video Toaster Flyer was used on a Titanic expedition and how LightWave 3D helped bring the "Titanic" TV mini-series to life (in "ShortTakes"). If you still crave Titanic information after reading this issue, be sure to check out the *NewTekniques Titanic* special on the *NewTekniques* Web site at www.newtekexpo.com. There you'll find pages of additional information on the movie and history of this grand ship that has been brought back to life many times thanks to the help of NewTek products. Special thanks goes to Jean-Eric Henault for helping to bring this Web experience to life.

Titanic Achievements

It's amazing to think of some of the accomplishments those on the Titanic, including the captain, had achieved in their lifetime. Yet while the adventure of James Cameron's *Titanic* will live a limited life in theaters (and most people's minds), your ability as an artist has only begun. Stand strong against the obstacles of life and don't let anyone or anything sink your dreams.

NewTekniques

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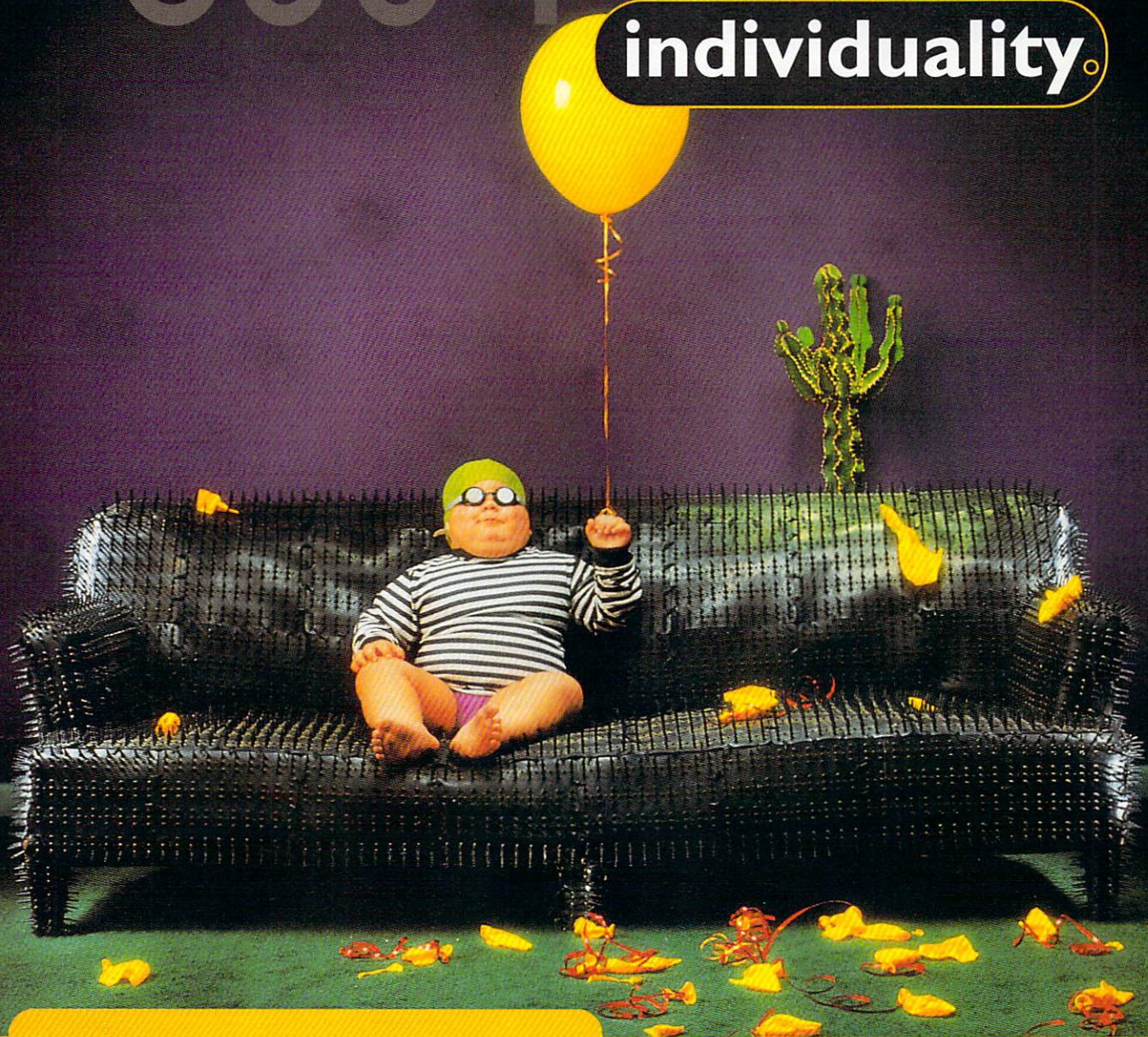
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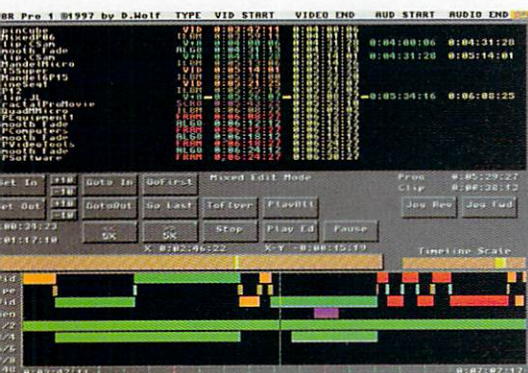
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Premieres

NEW PRODUCTS TAKE A BOW ON OUR STAGE

LIGHTWAVE 3D PRODUCTS



AV8RPro

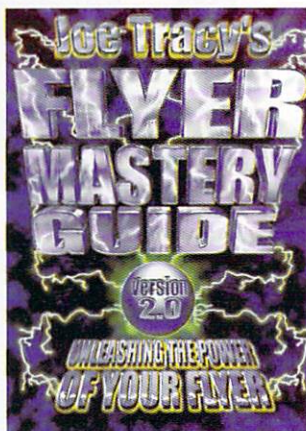
AV8RPro ++, MegageM's newest release of the AV8RPro timeline/EDL program, is shipping with added new features for Flyer owners. Among them:

1. LayerPlayer opens up the Flyer's ability to play two clips at once, synchronized, and in real time. LayerPlayer permits real-time video layering, partial FX video mixing, and luma-keying one clip over another. LayerPlayer also can play one clip inside the letters of a CG framestore while another clip plays in the background.
2. A++ sports new VCR controls that include accurate insert and assemble editing of Flyer projects to tape.
3. A++ now has direct access to major Flyer GUI features.
4. A GPI trigger output capability can be adapted to activate a variety of external professional video and audio devices like switchers and DVE units.
5. An optional GPI-triggered timecode generator provides SMPTE timecode output from the Flyer. For more information, contact MegageM, 1903 Adria Ave., Santa Maria, CA 93454, (805) 349-1104, www.megagem.com/a++ .html.

Circle Number 196

Flyer Mastery Guide - Version 2.0

Joe Tracy's "Flyer Mastery Guide - Version 2.0" is now available through dealers and resellers and direct from the publisher, Studio Visions. In addition to three new chapters and updates to all the original chapters, this second version also contains a Flyer Mastery CD-ROM full of images, backgrounds, objects, and even a few fonts. The cost for those upgrading from the first book is \$74.95. Upgrades must be placed directly through Studio Visions. New purchases retail at \$129.95. Some dealers are now

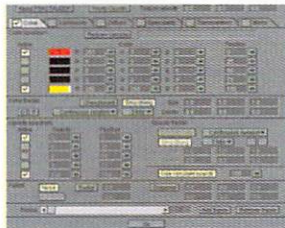


bundling this book with new Video Toaster Flyer systems. Studio Visions can be reached by phone at (800) 672-1880; by email at flyer@studiovisions.com; or on the Web at www.studiovisions.com.

Circle Number 197

Fractalizer

Fractalizer, a new LightWave 3D plug-in from Dynamic Realities, is a fractal noise shader that replaces LightWave's Fractal Noise. It adds more control and versatility over animation, appearance, and opacity. With Fractalizer, you can create fire, explosions, and hyper-realistic clouds without huge rendering times. Features include Five Color Spectrum, Radial Falloff, Fractal Opacity, Fractal Morphing, and the ability for all effects and controls to be key frameable. Fractalizer is \$150 for Intel and Mac, \$250 for Alpha, and \$750 for SGI and Sun. Contact Dynamic Realities, 1900-A Pewaukee Rd., Waukesha, WI 53188, (800) 944-5520, www.dynamic-realities.com.



Circle Number 198



4DPAINT

4DVISION Asia has released 4DPAINT 1.6 REMBRANDT and GOYA, which support the LightWave 3D 5.5 LWO file format. This enables LightWave 3D users to employ the sophisticated 4DPAINT program.

4DPAINT is a real-time 3D paint environment for computer graphics artists. It is suitable for game developers and character animators or anyone doing professional 3D work. 4DPAINT has a modular brush and paint system offering unique painting and texture effects in real time. The 3D artist can paint color, bump, opacity, self-illumination, and shininess or any combination directly onto the surface of a 3D object with a single brush stroke. 4DPAINT REMBRANDT retails at \$495 while 4DPAINT GOYA retails at \$199. Contact 4Dvision, 5500 Greenwood Plaza Blvd., Englewood, CO 80111, (800) 252-1024, www.4dvision.com. 4Dvision in Asia/Europe can be contacted by email at 4dvisiasia@4dpaint.com.

Circle Number 199

HANDS-ON TRAINING

by Bob Anderson

VIDEO TOASTER & THE FLYER

How to Get the
Most Out of Your Toaster



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Circle #215

1998 WORKSHOP SCHEDULE

LIGHTWAVE 3D

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San Francisco—February 21 - March 6

Dallas—March 12 - March 21

Washington DC—April 25 - May 8

Detroit—June 5 - June 14

Topeka*—July 18 - July 25

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Topeka—September 19 - September 26

Atlanta—November 7 - November 20

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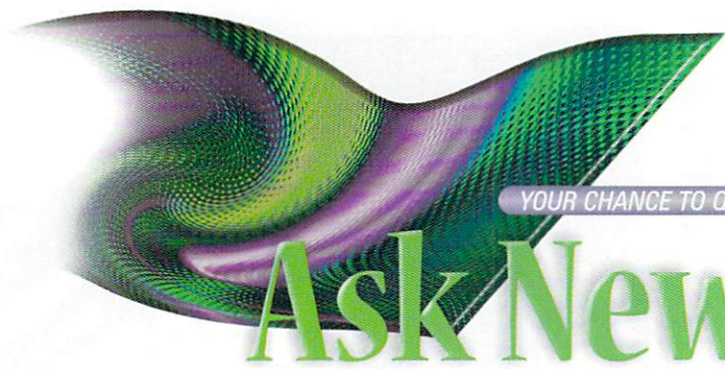
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you would like to ask
NewTek, mail it to:

"Ask NewTek"

NewTechniques

1038 W. Harvard Blvd.

Roseburg, OR 97470.

You can also email
your questions via

jtracy@main.rosenet.net.

Q. There is a lot of talk floating around about NewTek abandoning the Toaster/Flyer on the Amiga platform. Is there any truth to this and, if not, what exactly is your position on the subject?

A. The Amiga platform has always been and will continue to be important to NewTek. As most of you know, Gateway purchased Amiga last April and we have been in discussion with them on the future of the Amiga platform and are waiting for some resolution from Gateway. We are watching the market and Gateway very closely and will act accordingly and update you as soon as we can.

Q. With the recent announcement of Flyer development on the Amiga being put on hold, my question is are you working on any further video solutions for the marketplace or have you become just a LightWave company?

A. NewTek has many new video hardware and animation/graphics software products in development. We introduced Calibar at NAB and showed off some of our new technology at Siggraph. NewTek is building a complete product family to be a full-service provider of hardware and software for the

video and special effects industry.

Q. Whatever happened to the promised Flyer HQ6?

A. HQ6 is still in development and we have plans to take it into beta in the next few months.

Q. I went to the LightWave Theater event at NewTek Expo and was blown away by everything LightWave 3D is being used for. Were you aware of all the applications that were shown there? Also, I heard that the "OEDEBATTLE" is being considered as a movie. Is this true?

A. Our users continue to dazzle us year after year. We are very proud that we provide them with the tools they need to produce such stunning animations and projects. [Editor's Note: NewTek did not know the answer to the second part of this question. It is our understanding, however, that "OEDEBATTLE" is being considered as both a movie and a game. NewTechniques will keep you updated].

Q. Is it true that Fori Owurowa is no longer employed by NewTek as a LightWave 3D developer? Where does this leave NewTek's LightWave programming team?

A. [Editor's Note: NewTek has a policy of not answering any questions that are employment related. They did, however, respond to the second part of the question]. As far as NewTek's LightWave 3D development team is concerned we have recently opened a San Francisco LightWave 3D development office specifically for LightWave development and have greatly expanded our staff and will continue to add qualified people in the future.

Q. Congratulations on your move to Texas! Now that you've been there a couple of months, how does the employment outlook appear? If I wanted to apply for a job who would I call?

A. We are very pleased to be settled in our new home in San Antonio, TX. Our corporate headquarters provides us with lots of space to grow in all areas, including sales, marketing, engineering, and customer support. We are always looking for talented professionals. If you are interested in pursuing a career with NewTek please submit your resume via our Web site at www.newtek.com or fax to the human resources department at (210) 370-8001.

Enhance Your Digital Image

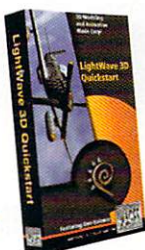
With New Training Videos for LightWave 5.5 and Photoshop 4.0!



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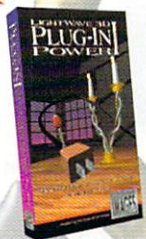
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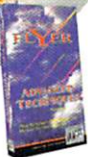
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NEWS OF NOTE FROM THE WORLD OF NEWTEK AND BEYOND

ShortTakes

BY JOE TRACY

NewTek's Flyer

Brings Titanic to Life!

Two-and-a-half miles deep in the ocean, where only six submarines in the world can reach, the sunken Titanic was brought to life in August of 1996 for thousands of people paying up to \$5,000 each to watch footage sourced through a Video Toaster Flyer. R.M.S. Titanic, which has the salvage rights to the Titanic, had arranged this expedition of two cruise ships, the Royal Majesty and Island Breeze, for people to be on site to watch Titanic recovery and information-gathering efforts.

For safety reasons, the cruise ships had to stay a good distance from the submarine expeditions, but it was all brought up close to them through live 24-hour telecasts. The ship Nadir housed the mini-sub, Nautilus (used to explore Titanic's grave), while also serving as the television broadcast facility to transmit footage to the thousands on the two cruise ships. The Flyer served as the main switching and source unit.

"The heart of everything we did on the broadcast was done on the Flyer," says Bruce Braun, president of Creative Teleproductions, Inc. He was hired by Classic Worldwide Productions to

serve as the director of television broadcast operations for the expedition.

The Flyer, along with the rest of the video equipment, had to be tied down by rope and bungee cords to keep it from falling out from the ocean's unforgiving force. "It didn't burp once during the entire time we were up there," says Braun. "It amazed me how stable the system was."

Also along for the journey were celebrities, like astronaut Buzz Aldrin, who would go down in the submersible to the Titanic's grave and come back to give television reports for



Bruce Braun sets for another live broadcast at the Titanic expedition site. The Flyer is in the bottom left corner.

the broadcast. Aldrin, the second man on the moon, said the experience was the "third greatest experience" in his life. Number one was his first flight as a pilot and second was his walk on the moon.

The Nadir arrived at the Titanic site 20 days ahead of the cruise ships, which gave Braun and his crew plenty of time to create mini-documentaries that would be integrated into the mostly live 24-hour-a-day broadcasts while the cruise ships were on site. Nearly every room and TV on the cruise ships received the footage, which was microwaved from the Nadir. All the mini-documentaries created prior to the arrival of the cruise ships were done on the Flyer. Asked why he uses the Flyer, Braun says that besides its broadcast quality, "It's many times faster and easier to use" than other systems.

"For the Titanic expedition coverage it was perfect, providing us with video capture, non-linear editing, titling, paint, animation, and on-air switching all in a single package," he says. The highlight of the expedition was when the submersible went to the Titanic site. A TIVA (Transmit Instantaneous Video Acoustically) relayed live shots from the Nautilus directly to the Flyer, and then to the cruise ships.

The footage also was sourced, with footage from two other documentary crews, for the two Discovery Channel specials on the Titanic.

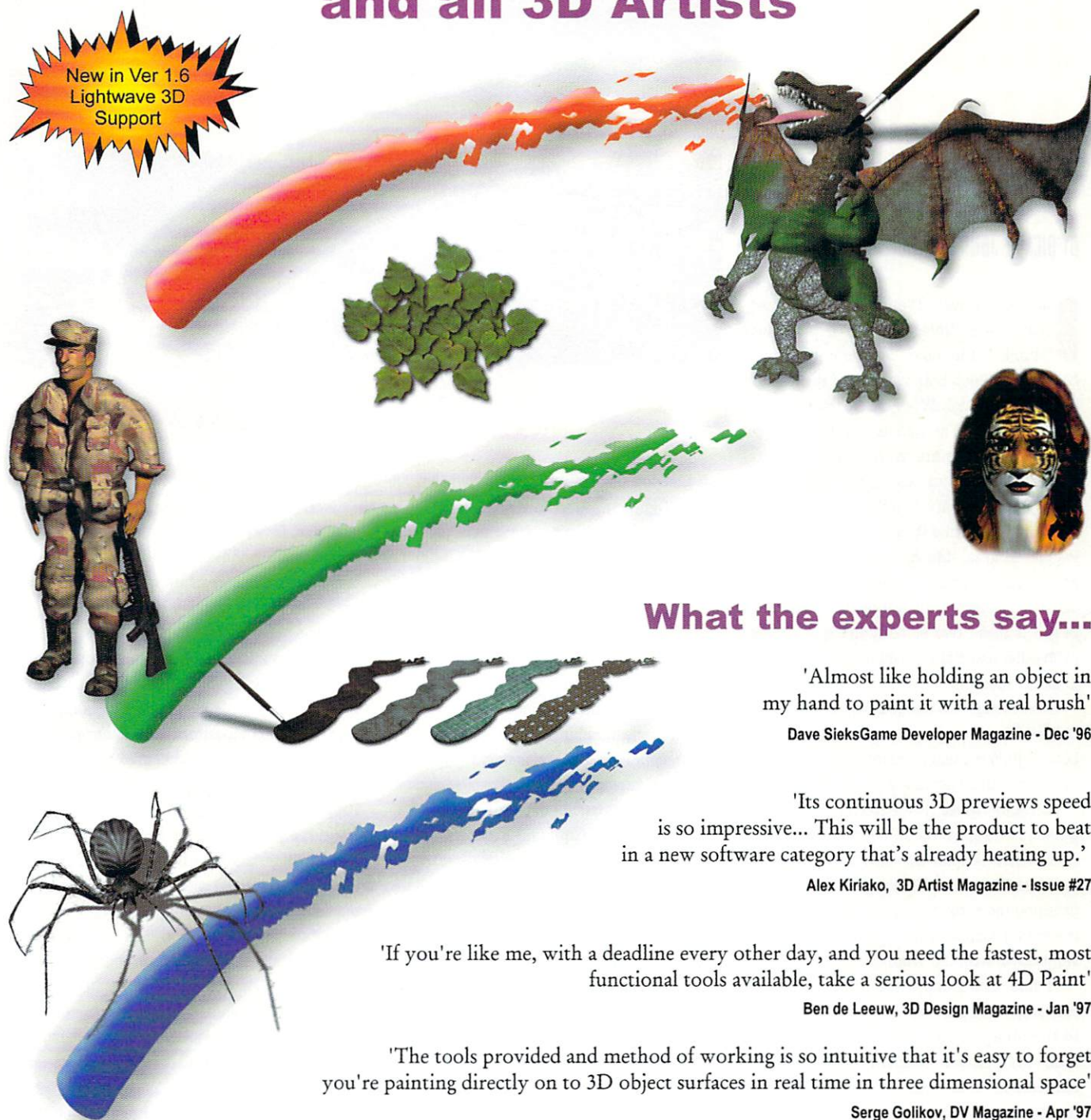
With a million-dollar lighting system (towers) put in by the submersible, the finished footage, even in Flyer extended play mode, looked incredible, according to Braun. He's looking forward to the possibility of returning to the Titanic site next year, with Classic Worldwide Productions, to do more broadcasts.



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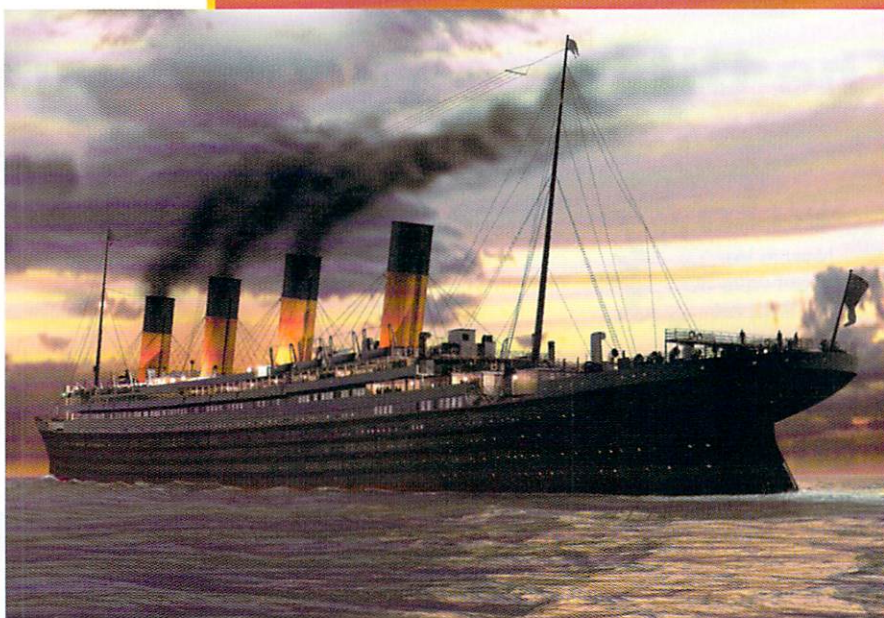
BY DICK DE JONG AND MOLLY DINKINS

Before there was *Titanic*, the epic, three-hour movie (December 1997), there was "Titanic," the epic, four-hour miniseries (December 1996). Both versions of the ill-fated voyage used LightWave 3D to recreate the doomed vessel. The names of the two visual effects houses start with Digital—Digital Muse (the miniseries) and Digital Domain (the movie). The primary LightWave modelers for the ships are named Peppler and Tepper—Bob Peppler (Digital Muse, the miniseries) and Fred Tepper (Digital Domain, the movie). With all this synchronicity, we wouldn't be surprised if these two ships didn't quietly pass each other one star-crossed night on the virtual North Atlantic.

Even though the budgets and schedules for the two *Titanic* projects were widely disparate, both LightWave teams maintained a vigilance for the historical accuracy of the ship.

At Digital Muse, the LightWave crew was guided by Peppler, the in-house *Titanic* historian. When Peppler was 10 years old, his sister loaned him the *Thinking Machine*. After finishing the book, he wanted to read more by the author Jacques Futrelle only to discover he went down with the *Titanic*.

"I had heard about the *Titanic*," Peppler recounts, "and that was the last straw. I went to the library to find out more about it." He read the famous account, *The Night to Remember*, and was hooked. "I'm still researching, much to the chagrin of everyone else around me," he admits. After college, Peppler joined the *Titanic* Historical Society and has become such an authority on the ves-



sel that the president of THS called him one day at Digital Muse to check on a fact.

Because of the scheduling constraints of the miniseries production, Digital Muse began with a Viewpoint model of the liner. To make the model historically shipshape, Peppler consulted photos and blueprints from his private library. He wanted to make the ship as accurate as possible, but he knew that he only had time to fix the major things. Windows were moved while rigging, railings, and portholes had to be added. Details like anchors, chains, docking equipment, and propellers were created for close-ups and underwater shots.

"Sometimes," explains Bruce Branit, a member of the Muse crew, "we walked the line between realism and visually interesting. The real *Titanic* left England absolutely clean. We made it new, shiny, and spotless; but on TV, it was so large and so clean that it looked like an effect. We had to weather it and make it dirtier to make it more realistic."

Realistic water was another matter. All the wide background ocean shots used CG water created in LightWave. Sometimes for the close-ups, real splashing waves were composited on top of the digital water. The iceberg and ice also were built in LightWave. Smoke and steam were either real, virtual, or a com-

bination of the two.

Even real actors shared the screen with digital ones. In wide angle shots, the 3D people (modified from the Perfect People Collection) had "video game resolution" detail. But one particular shot demanded more detail.

There was a scene in the miniseries (one of the last shots Digital Muse worked on) when the *Titanic* was breaking apart and the sailors were sending out SOS signals. Originally, the plan was to composite a live action plate of people flashing Morse code onto the 3D ship. "The plate didn't fit with our geometry," Peppler says. "I replaced the three or four people in the live action shot with digital characters and then added a bunch of other people and detail to sell the shot. I stayed up all night, but they kept it in."

"He was here when we came in the next morning," says Digital Muse partner John Parenteau. "He caught the mood of the moment on that shot. People were running all over the decks, uncovering lifeboats, giving directions. And it was all done without motion capture."

Capturing the mood of the moment on the *Titanic* is a richly deserved testament to Peppler's skill and obsession.

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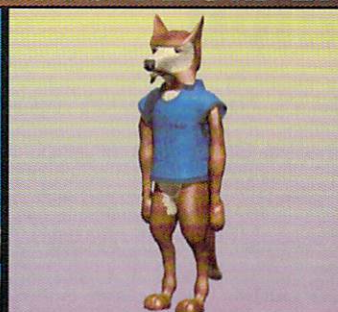
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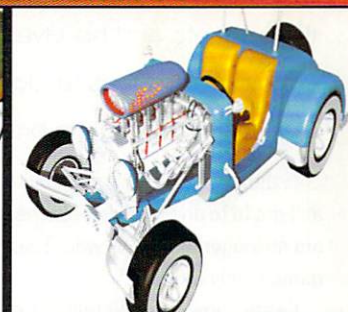
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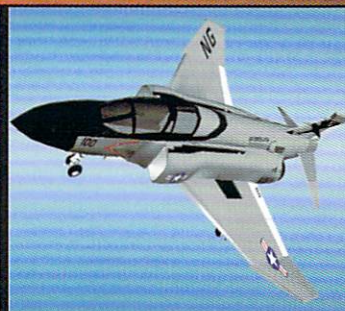
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Circle #218

Santa Vs. The Snowman

ABC's recent "Santa Vs. The Snowman" (which aired Dec. 13), the animated Christmas special, was an example of LightWave 3D artistry courtesy of DNA Productions of Dallas, TX. "Santa Vs. The Snowman" is about a falling-out between Santa Claus and a resident lonely snowman. Enlisting the help of snow-minions, the snowman wages battle on Santa and his elves, threatening to delay Christmas. Creator and director John Davis (of Johnny Quasar fame) paired with producer Steve Oedekerk to bring the project to life.

"I didn't get into 3D to do photoreal material; I got in to do better stop-mo," says Davis. "I am no longer limited by what I can build in my garage, only by RAM."

Santa was completely animated with LightWave using MetaNURBS, Morph Gizmo, and Puppet Master. All the animation was done in the two-and-a-half months allocated to the project. The project was made by a CGI team of seven animators, one technical director, and an assistant technical director. There were originally about 380 shots totaling nearly 30 minutes of pure rendered animation before scenes were cut.

Throughout the "Santa" production, Davis tirelessly worked to construct "a 3D cartoon; to take 2D cel techniques and design, and apply it to a 3D world." It has a cartoon look, injected with the theatrical lighting effects and shadows that exist in the real world. Animators on the project found that because the design comes from cel animation, there are no compromises based on the technology.

During the course of the three-month project, many of the maps were deliberately enhanced in Photoshop to make any realistic textures more "cartoony."

"We created everything from rusty pipes to snowman tears," says Dave "Tex" Bradley, who also worked on the project.

Toonsmith and DNA's co-founder Keith Alcorn believed that the foundations of traditional animation would not only apply, but also strengthen the appeal of the project while incorporating cel animation into character design. Alcorn cites influences of J. Ward ("Rocky & Bullwinkle"), and describes the characters as "pretty much over-the-top cartoons."

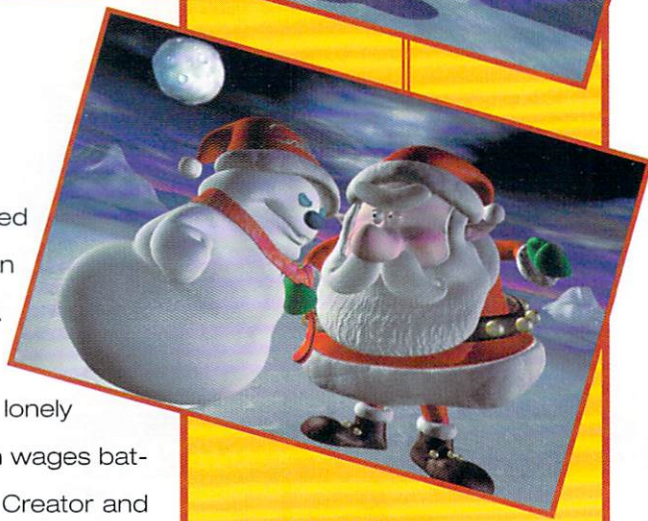
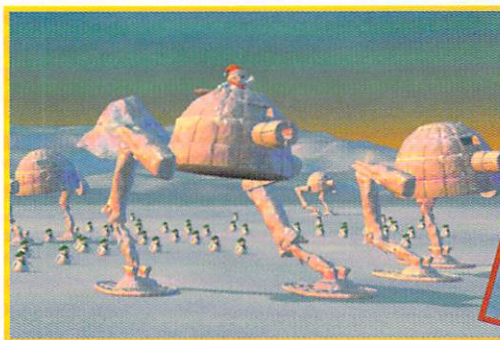
"In cel animation one can cheat more," says designer Danny Dudley. "3D presents challenges of reality. For example, Santa's furniture had to match his short legs, which influence the overall look."

Davis stresses the importance of approaching computer animation as an artist, and not a technician.

"I approach animation from the film side rather than the computer side," he says, "thinking in cinematic terms rather than merely technical terms, visualizing content to propel the story rather than just a cool graphic." Davis says that the medium allows for a constructive process of realization. "The first 75 percent is really fast, and that last 25 percent takes three times as long, but that last 25 percent really makes the shot," he says.

While "Santa" covered new ground stylistically, several of the techniques were honed from prior experience several animators learned from working on the *Casper* sequel with OCS. All the central characters were translated into 3D by Susan Ishida. "The MetaNURBS Queen" (a title given Ishida by Morph Gizmo's creator Fori Owurowa) states that drawings translate sometimes unpredictably.

"What is cute or interesting in 2D changes in three dimensions," says Ishida. "3D has some distinct challenges, and some great advantages."



BY ROGER VETRUBA

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FLYER WORK CAPTURES TOP AWARDS

Arthur Polin of Magic Memories Productions in Florida has been winning major event awards for his artistic wedding work with the Video Toaster Flyer.

The work of Polin and his team at Magic Memories Productions has captured the Creative Excellence Award from WEVA International for the last three years straight as well as the PROVA Award from the Association of Professional Videographers last year. Polin, a board-certified internal medicine physician for 20 years, is operating his video business on the side. His specialty is 30-minute "movie stories" of weddings that involve major editing and entertainment angles.

"Because of the Flyer, I am able to shoot with only one camera and be extremely creative in post," says Polin. "As a result, I am booked almost through the end of 1998 with high-end and high-pay weddings, bar mitzvahs, and other events."

QUICK NOTES

Area 51 has been contracted to do LightWave 3D effects for at least the first hour of "From the Earth to the Moon." It is a new 13-hour HBO/Tom Hanks series covering the space program from the beginning to the landing on the moon.

The effects of ABC's recently pulled "TimeCop" series were produced in LightWave 3D by Flat Earth Productions, which also does LightWave effects for "Xena: The Warrior Princess" and "Hercules: The Legendary Journeys."

Megatoon Studios, Inc., based in Quebec, is using LightWave 3D in the upcoming PlayStation game "Jersey Devil." LightWave was used for all the modeling and level setup while texturing was done with a custom tool that allows UV mapping with LightWave objects. The character animation was created in Alias, then transferred into the LightWave scenes.

Midway Games used LightWave 3D for the arcade version of "Mortal Kombat 4" and "Mortal Kombat Mythologies: Sub-Zero" for PlayStation, Nintendo64, and PC. In "Mortal Kombat 4," LightWave was used for everything except motion capture. Four of the artists were Dave Michicich, Steve Beran, Tony Goskie, and John Vogel. For "Mythologies," LightWave was used throughout. The artists for it were John Tobias, Josh Tsui, Richard Ho, Carlos Pesina, and Eugene Geer.

Interplay has been using LightWave 3D in the creation of many games, including "Starfleet Academy," "Star Trek: Vulcan's Fury,"

"M.A.X.," "Fallout," "Shattered Steel," "Beat The House," "Balder's Gate," and "Red Asphalt."

Red Orb Entertainment is preparing to release "WarBreeds," a real-time strategy game in which all creatures and devices in the game were built, animated, and rendered in LightWave 3D. This "genetic conquest" is expected to hit store shelves in early 1998.

A number of former Digital Domain LightWave NT artists have joined together to form Station X Studios under the direction of Grant Boucher. In a surprising development, Fori Owurowa and Dan Milling, formerly of NewTek, also joined Boucher's team. (See this issue's "TekMasters" on page 18 for more information.)

Motion Pack and Film Grain, both plug-in CDs from NewTek, are now available. The Film Grain CD retails at \$149 while Motion Pack, which includes five plug-ins, retails at \$249.

The NewTekniques Web pages have moved! Check out the new site at www.newtekex-po.com.

If you have information as to how LightWave 3D is being used in the gaming or movie industry, please email the name of a contact person and phone number to Joe Tracy at jtracy@main.rosenet.net.

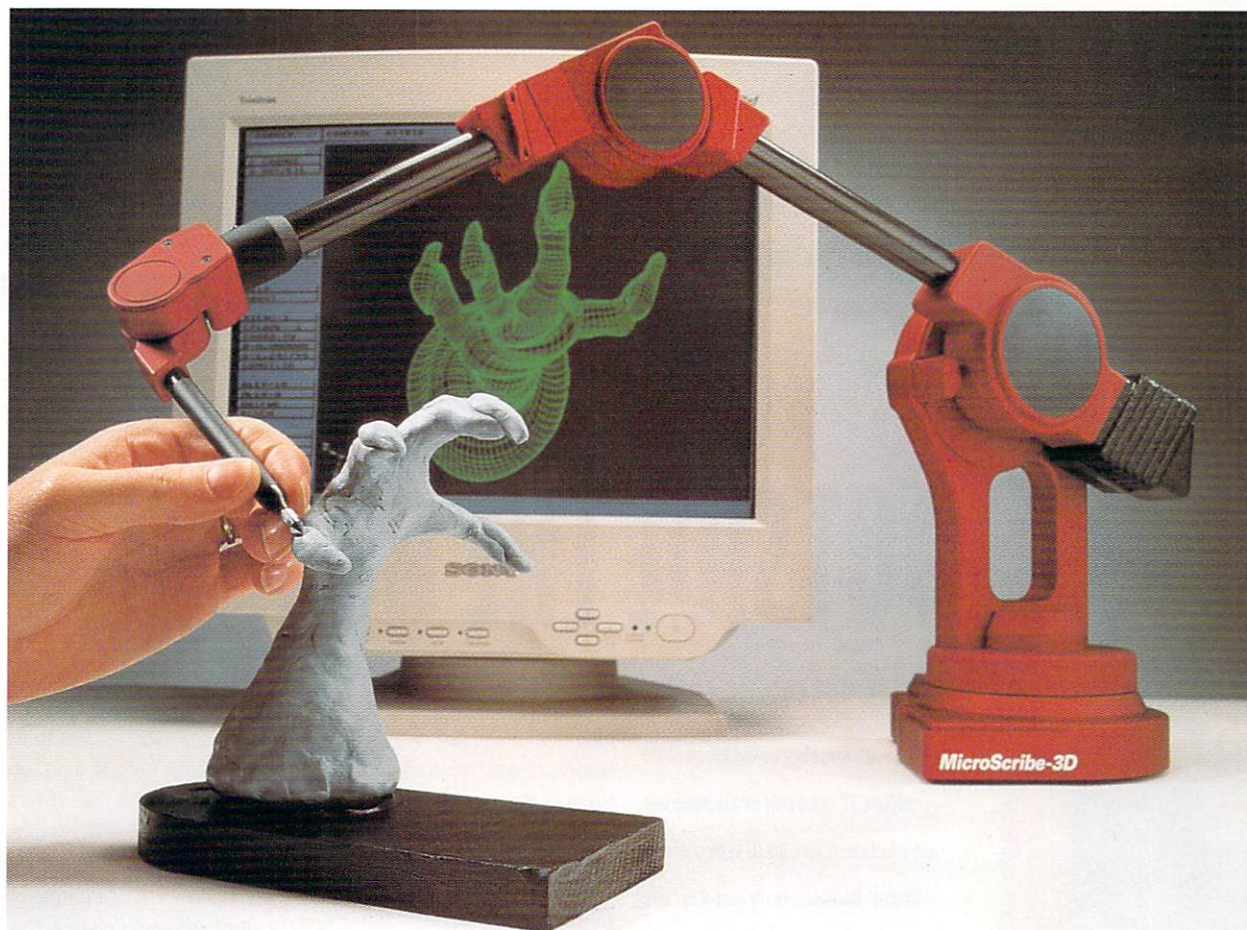


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TEKMASTERS

MEET THE INNOVATORS OF THE INDUSTRY—PAST, PRESENT, AND FUTURE

Grant Boucher OUTSIDE THE BOX

EDITOR'S NOTE:

Grant Boucher is well known in the LightWave 3D community for his leadership and effects work with the NT team at Digital Domain. Boucher recently formed his own company, Station X Studios, and got some of the top animation names in the industry to join him. We caught up with Boucher to ask him a number of questions about his past, the *Titanic* movie, and his future.

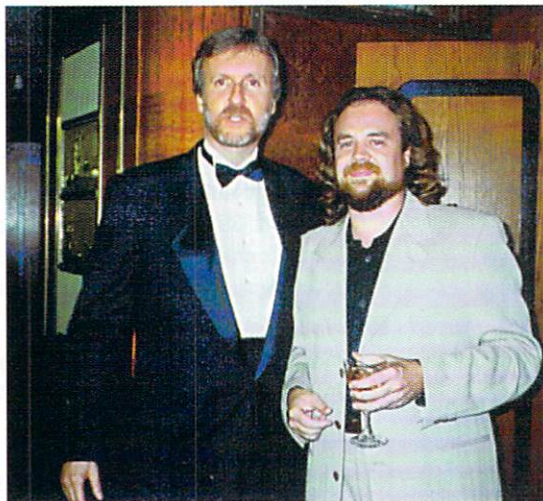
NewTechniques: You've come a long way in the last few years. Before we get to your new ventures, tell us what you did before coming to Hollywood and how you ended up there.

Boucher: Like almost everyone else who has come before or after, I wouldn't be in this business without the Amiga, the Video Toaster, and LightWave 3D (0.93gamma). I had been a successful 3D graphics programmer and all-around physics, math, and computer geek in high school, but had stepped away from photography and filmmaking in favor of science fiction and fantasy writ-

ing and theoretical physics. Then the Amiga 1000 arrived in my life and I found I could write and do 3D and 2D all on the same machine. I remember telling the owners of the computer store I managed in Florida that LightWave could change the special effects industry—that we could make movies with our home computers. I followed that dream right out the door of that company and into my own cheap apartment. I owned a Toaster in my Amiga 2000, but I upgraded to an Amiga 3000 and used the cracked FPU version of LightWave just long enough to make my first DCTV demo reel (NewTek forgive me!). That reel was showing in the local Amiga store where a producer friend of mine, Karim Miteff, at Nickelodeon, saw it, and I suddenly started making more money as an animator than as a writer (I was still desperately poor, though). A year or so later, another friend of mine, Bill Wiatroski, met a man by the name of Richard Lewis, who just happened to be the production designer for "seaQuest." Within months I was working in Hollywood and have been very fortunate ever since.

Above:
Grant Boucher, CEO of
Station X Studios.

Right:
Boucher and James
Cameron.





The Boucher ancestral castle in Ireland.

NewTechniques: What was your position at Digital Domain and what was the most enjoyable or profitable part of your experience there?

Boucher: I was both a digital effects supervisor and head of the Windows NT division (and NT system administrator for the first year!). I think the best thing about Digital Domain was the attitude of the people. The pirate flag, the "take no prisoners" stance...the place was made for my form of braggadocio. Seriously though, the opportunity to work with some of the best eyes in the business, James Cameron, Rob Legato, and Price Pethel, all raised the quality bar on all of the work we've done. I also particularly enjoyed my meetings with Jim on *Avatar*. Jim truly grokked what the guys and I were all about. It is a small town and I plan to lead a long life. I hope to work with all of these men again sometime in the future.

NewTechniques: In the past year you had the opportunity to work on *Titanic*. What was your job position with *Titanic* and what was it like working on such a high-profile film with such major demands being placed on you?

Boucher: My direct role in *Titanic* was very minimal. I had the title of digital *Titanic* technical supervisor, which basically meant I oversaw (along with Hector Barrera, NT system administrator) the design, construction, and operation of the 160-DEC Alpha render farm purchased by 20th Century Fox for Digital Domain in order to deliver *Titanic*. Fred Tepper, Richard Payne, and the team of NT digital artists who worked on the digital ship and set extensions really deserve all of the credit. My indirect role was much more satisfying. A year earlier there wasn't an Alpha NT workstation in the company. By the delivery of *Titanic* we had almost 250 Alpha CPUs in the facility. The film just wouldn't have delivered without the monumental changes we made to Digital Domain and James Cameron told me at the *Titanic* Wrap Party (on the Queen Mary) that the NT group had "changed the way he makes films." Even accounting for the fact that both of us were feeling no pain due to the open bar, the compliment meant more to me because it was a global affirmation of everything the team and I had fought for since arriving at Digital Domain. I

take great personal pride in having provided some of the technological solutions that ultimately allowed *Titanic* to be made.

NewTechniques: What kind of instructions did you receive from Cameron as to what the finished product should look like and how hard was it to meet those demands?

Boucher: Jim is notorious in the industry for his perfectionism. His reputation preceded him, but we had worked with dozens of directors on "seaQuest" and "Star Trek: Voyager," so we wondered just how "bad" he could be. We discovered some very important things. Jim expects that the people around him are the best in the business and that they are fully capable of doing whatever he asks. While many people have failed this test, Richard and the guys did phenomenally well and always took their work the extra step. Their experience with Jim was a satisfying one and without a doubt we would work with him again. The guys do great work. Jim has no problems with people who do great work. From an artistic perspective, the guys came at the problems presented to them as artists and filmmakers. This is how Jim and Rob work as well...again, a very satisfying experience. The digital *Titanic* needed to look real and match the real set pieces. Once the guys reached that plateau, it was smooth sailing, and then Jim started having the guys replace even sections of the real set that didn't look right to him—just because he knew we could. That

is what it is all about for us—artistic collaboration.

NewTechniques: A lot of LightWave users are not going to know what is LightWave in *Titanic* and what isn't. But a lot of programs were mixed together to create it. Are there any discerning aspects or shots that you can say "that is LightWave"?

Boucher: If you can't tell whether it is real or not, then it is likely to be the real set and/or LightWave. I think the true testament to the achievement of *Titanic* is the seamlessness of all of the effects work. But if you look very closely at the laser disc of the film and say, "Hey, that's not real!" then it isn't a LightWave shot. Seriously, during the barrage of *Titanic* press, magazines, or "The Making of" books and television shows—always remember that if it's a digital ship in any way, whether it's all digital or just a part of it, it's LightWave, period.

NewTechniques: Anything else you'd like to add about *Titanic*?

Boucher: It was the team's first major feature film work—what a way to start your film career! People in the film business wait their whole lives to work on a film like this—it is a masterpiece. Years before, I was fortunate enough to be screening a film test in the Amblin screening room with Steven Spielberg the day after he won the Oscar for *Schindler's List*. I distinctly remember being walked through the Amblin "adobe mansion" courtyard and seeing all the stat-

(continued on next page)

TEKMASTERS



ues on display for the press. I was one of those people who believed the award was well deserved and told him so—again, he had created a masterpiece. I told Jim this story at the *Titanic* Wrap Party because I feel the same vibe surrounding his picture. I wish him the best, but I think he doesn't need it now. . . the work speaks for itself. Only Fred Tepper has as great a passion for the subject—Fred was hired at Amblin five years ago because he had built a digital model of the *Titanic*!

NewTechniques: After *Titanic* production, you left Digital Domain, with a number of other LightWave animators, to start Station X. In a shocking move, Fori Owurwa and Dan Milling both left NewTek to also join your company. What's going on and what are your plans for Station X?

Boucher: The team has won an Emmy for the "Star Trek: Voyager" pilot, "Caretaker" (one of my proudest moments) and a Clio for the "Nike: Virtual Andre" commercial. The work on *Titanic*, the

biggest film of all time, is exceptional, and the guys have been an integral part of its success. The film would not have been possible without them. So, how do you top *Titanic*? Well, the answer is you don't, really. You can't keep topping yourself forever, although I have tried and succeeded more than any man has a right to, I imagine. So, we decided that once the job was done, it was time to do everything we came to Digital Domain to do in the first place. So, Station X is an idea. It is all of us, sharing as partners to create a new kind of film production facility (special effects are a very small part of the picture). Fori and Dan had just left NewTek and approached us after hearing from mutual friends that we were finally making the big move. Like much of Station X, the Planet X team, Digital Domain's post-*Titanic* problems, Fori and Dan, timing and projects kind of all fell into place like it was meant to be. We're going to sail wherever the winds take us, but this time it will be our ship to sail. I can't believe men of this caliber will not succeed and I am honored to be at the helm.

NewTechniques: What would be your best recommendation to someone wanting to "break into Hollywood" as a LightWave animator and what do you look for in hiring animators for your team?

Boucher: CGI for us is really about filmmaking. We like artists who have a film background and not just a computer background. Along those lines, we are looking for traditional media artists, LightWave gods, model builders, producers who have "radical" production ideas, and programmers

who believe a "digital universe" is not only possible but inevitable. We are thinking "outside the box" but with a firm foundation in both episodic television and high-end feature film work. We will be training artists as well as hiring LightWave experts. We are looking for a rare mix of problem solving and art, with a sense of teamwork and honesty. I know what I am looking for, and so do the guys. We are looking to build on a foundation of exceptional talent—to create an artistic laboratory where there are no limits. Only I am permitted an ego. . . and even then, grudgingly as part of my job as "spokesmodel for X."

NewTechniques: Will Fori and Dan be building LightWave plugins for your company and if so, will they ever become available to the LightWave market?

Boucher: Of course. Fori and Dan were attracted by the "no holds barred" approach to our internal tool set. They had already left NewTek for reasons of their own, and we were very excited to get the chance to keep them within the "LightWave fold" so to speak, but more importantly, to allow them to work directly with the artists who will use their tools—to see firsthand what does and does not work, and why. Our intention with Station X is to not be wholly dependent on effects work, and selling our software tools is a great way of generating revenue without regard to the fickle market place. Will everything get released immediately? No way. We can only release tools that are bug free and have the features required for a commercial product. But we can't make any money on

the tools without releasing them, so you can count on the vast majority (and the really cool stuff) to be available to all. We will be collaborating with NewTek, making it a win-win for all. This control over our own tools creation was a BIG reason for forming Station X in the first place! And Fori and Dan are only half of our initial programming team.

NewTechniques: We definitely look forward to seeing your work in the future. Any closing thoughts you'd like to share with LightWave users?

Boucher: LightWave has arrived. *Titanic* is only the largest, most high-profile example of what is being accomplished in dozens of films by all of the major LightWave houses and by individuals right now all around us. Our software is no longer an issue. Our platform is no longer an issue. Everyone in town knows SGI is no longer required to generate the highest quality work. Everything is being ported to NT, and by LightWave 6.0, every other software package out there will be playing catch-up with us. Whatever NewTek doesn't code, Station X and the many other fantastic LightWave developers out there will. Like the broadcast and game industries before it, the film industry is now being revolutionized by LightWave and you. Sometimes it is not necessary to know what your destination is, but only how you intend to get there.

End Note: Grant Boucher is a regular opinion columnist for NT Studio Magazine (www.ntstudio.com).

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Creating the Titanic:

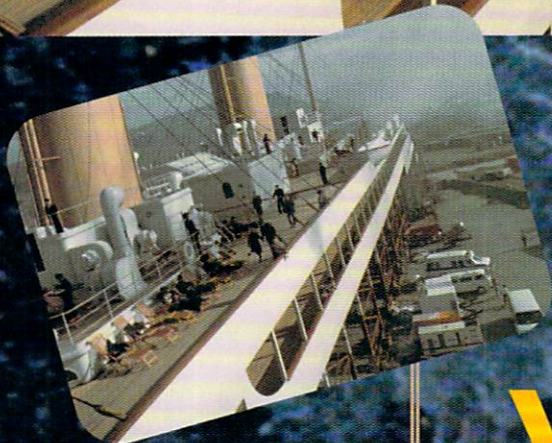
VISIONS OF THE UNSINKABLE



BY DICK DE JONG
AND MOLLY DINKINS

A First-Class

Action Film



Above: Sunny view of *Titanic's* deck, before the chaos of the early morning hours of April 15, 1912. The hull and water are digital. Below: the 9/10th scale of *Titanic* in Rosarito, Mexico.

Vision. Without the Vision, the 168 DEC-Alpha-based Carreras (the render farm), the 2.3 million polygons (the LightWave 3D ship), and the 750 billion bytes (the storage barn) don't amount to more than a very large hill of digital beans. With James Cameron's Vision for *Titanic*, the NT team at Digital Domain used LightWave 3D and these immense resources to help create awesome brushstrokes that virtually resurrected the R.M.S. *Titanic* back to her short-lived splendor.



The NT Team at Digital Domain who worked on Titanic, back row: Fred Tepper, Alan Chan, Meni Tsirbas, Richard Payne, Peter Nye, Frank Aalbers, Rusty Ippolito, and Karl Denham. Kneeling in the sand is Andy Lesniak.

In the film, Bill Paxton plays Brock Lovett, an adventurer, who hopes to find treasure—Louis XVI's Blue Diamond of the Crown—among the rusted ruins of the once glittering jewel of the White Star Line. James Cameron, *Titanic's* writer/director, is also "an adventurer, a filmmaker who wraps his adventures into his movies," says Rob Legato, the visual effects supervisor for the epic film. One of Cameron's grand expeditions was to deep dive in a Russian submersible 12,000 feet below the North Atlantic surface to view the Titanic's shrouded remains. As Legato describes it, "The buried treasure that Jim found was the film itself."

Told in flashback, Cameron's lush, lyrical vision is a romantic period piece mixed with class

conflict. The decade preceding World War I witnessed a power struggle between the hard-working lower classes from the Industrial Revolution who constructed the Titanic and the rich leisure class of Edwardian excesses for whom the luxury liner was built. Pauper Jack Dawson (Leonardo DiCaprio) breaks down those barriers by wooing and winning patrician Rose DeWitt Bukater (Kate Winslet).

The making of the movie is also about romance. For years, Cameron has been both enamored and haunted by the Titanic tragedy. And in 1995, a decade after the discovery of the Titanic's remains 380 miles off Newfoundland, Cameron enlisted his brother Michael (both are engineers) to design equipment that enabled James to film the

icy coffin during his 13 trips two-and-a-half miles below the ocean's waves. Thus launched James Cameron's voyage of the \$200 million cineramic *Titanic*.

Before they began principal shooting, Cameron and Legato gathered with experts to reprise the tragic events on the night of April 14, 1912. They considered all the theories as they studied eyewitness accounts, actual undersea footage, and evidence from the ocean floor to reassemble what really took place. One of the consultants was Ken Marschall, a Titanic authority and renowned maritime painter, whose emotionally moving paintings of the Titanic now seem part of Cameron's emotionally moving picture.

Not only did they have to unravel the mystery of what

happened that fateful night, they had to answer a thorny question: Why make another movie about the Titanic? After 17 movies and 18 documentaries, what's new? Legato explains, "We wanted the moviegoers to see something they never had seen before. We decided to put the viewer on the ship—not just during the cruise, but when it is sinking. Technically, that wasn't possible before."

The Titanic was 882 feet long. When it broke in half, the stern of the boat rose more than 20 stories above the roiling water. Hapless passengers were plummeted into icy waves. Because of safety concerns, stuntmen could not realistically portray these horrors.

"Previously, filmmakers couldn't tell this part of the story like

(continued)

Shot Sheet Shorthand

Listening to the animators of the NT *Titanic* team can make you feel caught in a cross-fire of cryptic ciphers—SS130, AW43, RS38. It is quickly learned that if you're going to survive you need to decode their shorthand—those cryptographs were shot numbers. SS139 stands for *Ship Sinking 139*. TD35, "That's a real hero shot!" translates to *Titanic Day 35*. You get the hang of it. Here are some of the other abbreviations that were used on the *Titanic*.

BS—

Breaking Ship

AW—

Add Water

RS—

Rose Suicide

TH—

Titanic Night

TS—

Titanic Sinking

TI—

Titanic

Transition

If you find yourself in the midst of a team of animators from another project, the *Titanic* code book won't help you so start lobbing your own shot numbers across their bow. Here's one of ours.

TW9—

Terrific Work Guys.

we could," says Legato. "They told it from lifeboats. Ours is the first one in which the story takes place on a drowning ship. Jim has a great imagination and he imagined what it was like to be the last person on the ship before it goes down. The audience gets to come along on the tense, turbulent ride."

To achieve the stunning effects that dazzle the viewers one minute and make them shiver the next, Digital Domain assembled a team of model makers, 2D and 3D computer artists, and programmers. Their task day-to-day was

to construct a canvas so seamless that you cannot tell where live actors transmute into digital characters or when full-scale models meld into virtual vessels. Their ultimate goal for every effect was to achieve Cameron's Vision. Says Legato, "We did it for the shot. All the technical stuff might be impressive, but what's important is that the shot moves you."

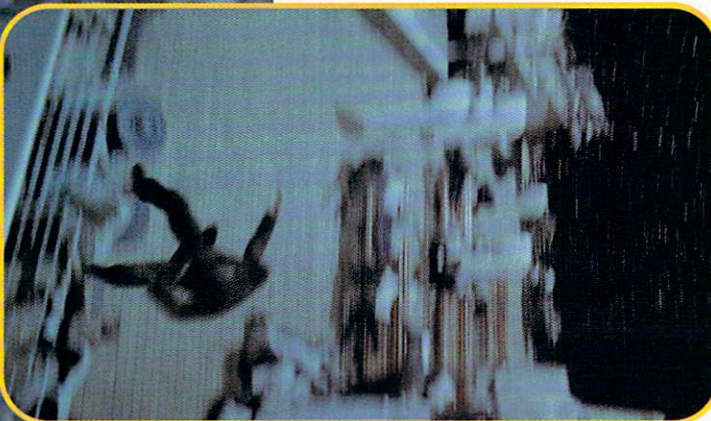
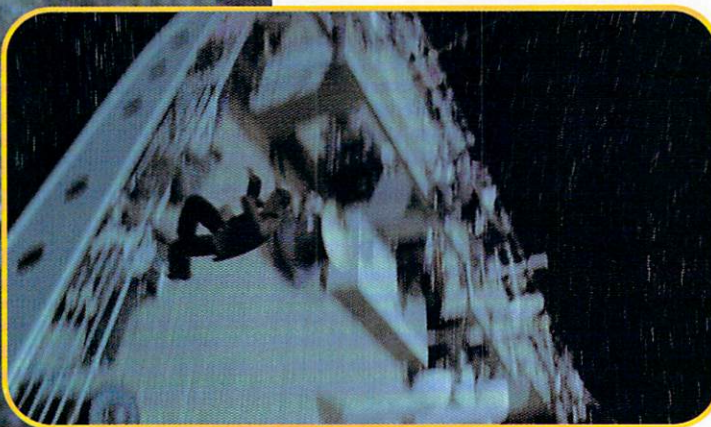
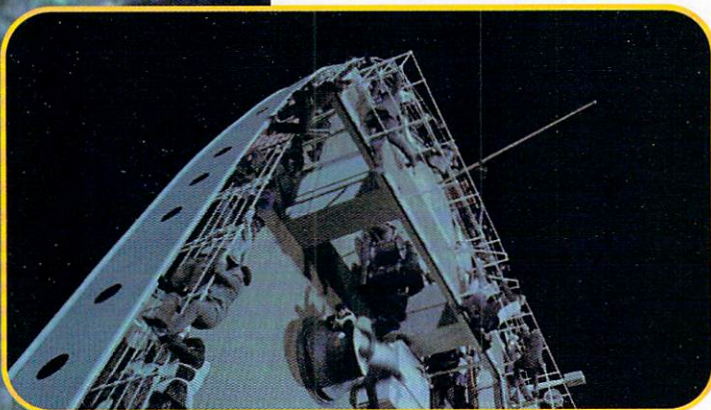
One of the first jobs was to recreate the *Titanic* in such detail that you believed that you were John Jacob Astor taking your morning constitutional in the crisp North Atlantic air. (Frosty breath was actually composited in some shots.) Legato had great success in using models in *Apollo 13*, so a variety of detailed models was constructed for this movie. Legato admits that the *Titanic* designs were light years more complex than the *Apollo*'s. "The rocket ship was basically a tin can with a point on it." The most stunning *Titanic* set was the 10-story high, 790-foot deck built in Rosarito Beach on Mexico's Baja Peninsula. This monumental, 9/10th-scale model was suspended in a gargantuan tank that held millions of gallons of water.

Other models in a range of scales were built for specific purposes. For example, a 1/6th scale center of the ship was constructed for the horrifying scene when the vessel cracks in two. Another highly detailed 45-foot model was constructed to 1/20th scale and was used for many of the "hero" shots (those long, sweeping, "ooh, cool" shots).

Fred Tepper of the NT team at Digital Domain was assigned to craft the digital model using LightWave. A little history here might be useful in setting the context in which Tepper was working. In the spring of 1996, Scott Ross, the CEO of Digital Domain, hired six LightWave artists as an experiment to see if LightWave could produce results in a high-end visual effects company. The NT team, as it was called, quickly proved its worth in Digital Domain's commercial division, producing award-winning ads for television (see sidebar, "A Class Act," page 28.)

Though the team had designed some of the cars for *The Fifth Element*, the *Titanic* was the first feature in which the NT team and

Image sequence: At the beginning of this shot, the poop deck and the man are real and the rest of the ship is digital. As the camera pans down, everything in the shot becomes digital, including the falling man.



LightWave were involved from the beginning. So when Tepper first started, the rest of the Titanic crew at Digital Domain did not know how well LightWave-rendered images would look at film resolution. Because of this uncertainty, Tepper did not know if or how his LightWave Titanic would be used in the film. But Tepper had a history of building the Titanic "on spec."

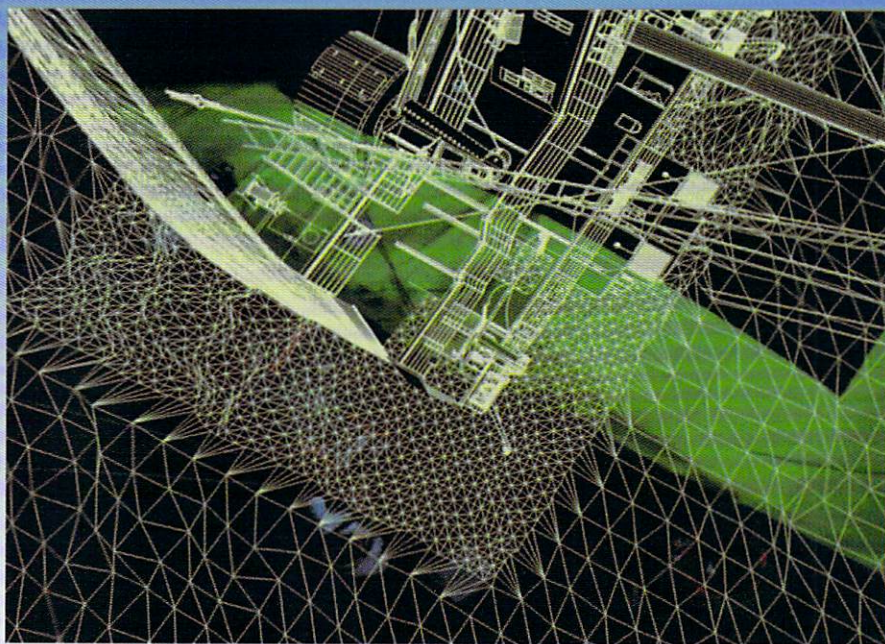
Back in 1992, when he was learning LightWave so he could get a job on "seaQuest," he figured he needed to create an interesting underwater scene to impress Joe Conti, the show's visual effects supervisor. So Tepper found a painting of the wreck of the Titanic and began recreating the sunken shell. His efforts won him a position at "seaQuest." And in an odd twist of fate, the artwork that he referenced was painted by Ken Marschall.

So, it's not surprising that Tepper was tapped to help design the Titanic at Digital Domain. And in fact, he began the project almost the first day he joined the company in March 1996. Richard Payne was the next NT member recruited for the project. His primary task at the start was texturing, though he occasionally assisted Tepper in modeling. They toiled for four months building and painting the ship. Tepper started at the front, erecting the bow of the binary boat and then building the poop deck at the rear. He then proceeded to complete it from front to back.

Since they didn't know how their creation would be used, their guiding principle was to make the ocean liner as detailed as they could. Tepper says, "We figured the better we make it, the more they'll want us." Payne adds, "Like typical LightWave artists, we were trying to prove something."

Their obsession led to a finished virtual vessel containing 2.3 million polygons. The complete boat with the hull was 236 objects with more than 85MB of image maps. To load a scene with the whole ship took 19 minutes. The LightWave model of the luckless luxury liner looked so authentic that you swear it could comfortably accommodate its 2,227 passengers and crew. Says Payne, "The bow is detailed enough that you can stand on it."

The hyperbole doesn't seem so farfetched considering Payne literally took a month positioning—by hand—20MB worth of 3D rivets onto the hull. He also spent a lost weekend per-



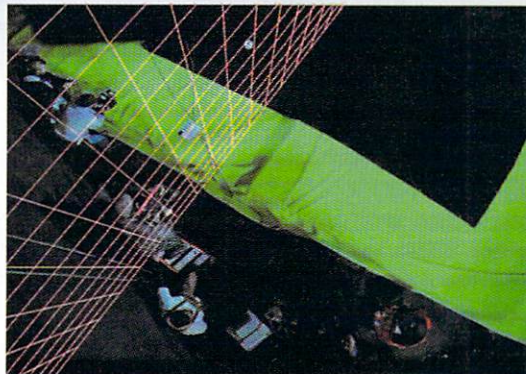
Wireframe of the sinking ship prior to adding the digital people.

forating the hull with 1,600 portholes in four different sizes. The irony is that the one shot that highlights the shadows cast by the rivets was cut from the film. But Payne didn't regret doing that much detail. And in fact, all the effort was appreciated by Cameron.

As Tepper and Payne were completing their shipbuilding, they were performing tests using LightWave's new enhanced antialiasing feature and rendering at film resolution, 2048 x 1556 pixels. "Everyone was surprised with how good the LightWave renderer was," says Payne. "It got us more shots"

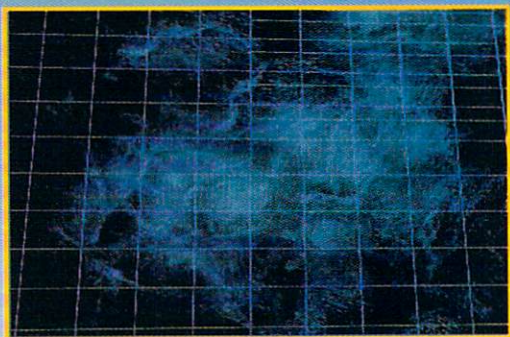
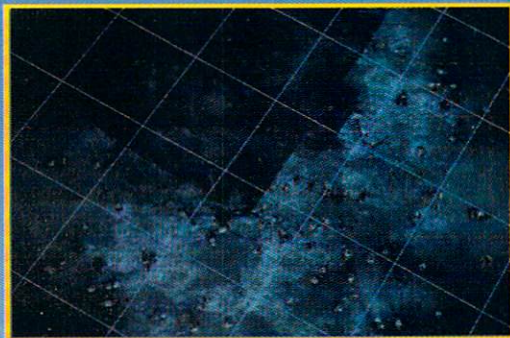
Once it was clear that LightWave could perform, shots began to be assigned to the NT Titanic team. By the end of the movie, nine LightWave artists participated in the project: Tepper, Payne, Karl Denham, Andy Lesniak, Alan Chan, Frank Aalbers, Peter Nye, Rusty Ippolito, and Meni Tsirbas. They soon discovered that getting LightWave's foot in the door was easy compared to the challenges faced in completing some of the shots. A good example was shot RS38. (See sidebar: "Shot Sheet Shorthand," page 22.) This was a long tracking shot of Rose running to the poop deck. Because the camera twisted and turned, the shot was a tracking nightmare.

Here was the situation: Rose (Kate Winslet) was shot running on the deck of the 790-foot model in Mexico. Because of the camera angle,



you can see the hull of the ship in the frame. When the real model was constructed, there was not a complete hull, so the one in LightWave had to be composited into the shot of the real deck. To create a seamless effect in LightWave, Karl Denham needed to exactly recreate that camera movement in his scene. If he was off by one pixel, it created an illusion that visual effects producer Crystal Dowd dubbed "hull breathing." Basically, it looked like the hull was detached from the deck.

When the NT team was first brought into the loop, the team members were told that their concern would be matching the lighting of these composited scenes. They were assured that a system had been devised for tracking motion control and the camera motion data would be handed to them "on a silver platter." The platter turned to tin. None of the data proved to be 100 percent reliable. RS38 was one of the first shots for which they received the film plates. It took Denham until July to sort out the motion control data. Ultimately, he used the data as a rough reference and did the final tracking by eye.



The Titanic Tragedy

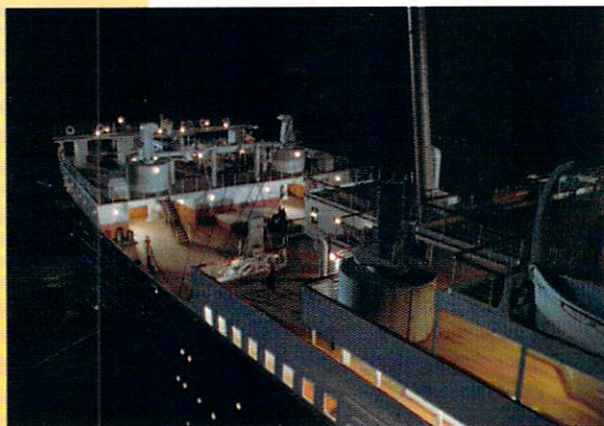
by Joe Tracy

On Wednesday, April 10, 1912, the Titanic left the port of Southampton to begin a voyage that ultimately was to end in New York. The Titanic was so huge and "state-of-the-art" for its time that the suction it created when leaving caused another ship, the New York, to snap all six of its mooring ropes. It headed toward the Titanic, but quick action by the Titanic crew averted a collision by only four feet. The voyage was delayed an hour.

The Titanic had been the most amazing ship ever built, complete with a swimming pool, gymnasium, suites (including fireplaces), two barber shops, a Turkish bath, squash court, a Parisien cafe with French waiters, and even elevators. First class passengers paid \$4,350 (\$50,000 today) for their chance to enjoy the opportunity of a lifetime. And for four days they did until the midnight hour approached on April 14, 1912.

At 11:40 p.m. that Sunday night, the lookout (who didn't have binoculars) spotted an iceberg dead ahead. The three-bell warning was given, but it was too late. The Titanic, labeled *unsinkable* because of its "state-of-the-art" watertight compartments, struck the iceberg and began to sink. At midnight the captain was warned that the Titanic would stay afloat for only a couple of hours. The captain ordered that an "S.O.S." be sent, putting Titanic in the record book as the first ship to use it, as the emergency code had just recently been changed to "S.O.S." from "C.Q.D." (Come Quick, Danger).

At 12:25 a.m. the lifeboats (16 plus four collapsibles), only enough to carry half the passengers, began loading. The first one was lowered away at 12:45 a.m. carrying only 28 people even though it had a capacity of 65. By 2:05 a.m. the last lifeboat had cast off leaving more than 1,500 (out of 2,227 people) still aboard the sinking ship. At 2:20 a.m. the Titanic, after splitting in half, took its final plunge two miles deep to the bottom of the ocean. The 705 survivors were picked up by the Carpathia, who had heard the distress signals 58 miles away. It arrived at 4:10 a.m.



CG people, created in Alias, Softimage, and LightWave, fall as water boils below.

One day when Denham was hunkered over the hyperventilating hull, Alan Chan passed his desk and said, "Are you still working on that shot?" Denham replied prophetically, "Wait until you get on this movie." Chan learned what that meant when he was assigned SS139. This shot is part of the terrifying sequence when the ship breaks up. We see the poop deck pitch perpendicular to the water.

To film this sequence, Cameron had built a prop christened the "ejecto poop." It is a section of the poop deck mounted on hydraulics so it can tilt 35 degrees as the ship lists in the water. It was Chan's job to attach the digital hull to the "ejecto poop" deck, matching its movement

as it goes. As before, the motion data was not reliable, but he had a bigger problem.

The deck did not match the measurements of the hull. Have we mentioned that as the NT team started to align the digital model with the real ones, they discovered that each model used a different set of blueprints? And beyond that, the modelmakers, like any master carpenters, really didn't follow the blueprints exactly anyway. So in every shot, the LightWave vessel was stretched or somehow contorted to match the geometry of the real-life models. By the time the movie was finished, there were 80 different LightWave versions of the hull!

And then there was the Vision factor. Often Cameron would ask that the model be twisted or turned to achieve the right look for the shot. Occasionally, the poor digital hull was stretched like taffy to get that perfect "eye candy" effect. When you consider that the hull itself contained more than one million polygons, you can imagine the effort to manipulate that much data and keep it rendering properly.

The payoff for Chan on SS139 was when Cameron saw the shot during a video teleconference.

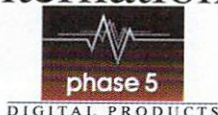
High and wide looking down at the ship, Rose runs aft toward poop deck.

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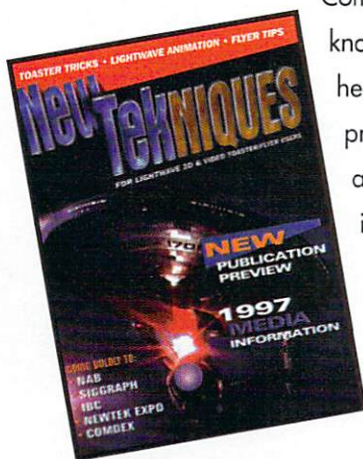
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"Cameron said that the LightWave ship looked better than the set and then he turned and said it also looked better than the model," says Chan. When the NT team heard this, they knew they had arrived.

SS140 probably proved to be the most spectacular shot where LightWave played a major role. In this shot, we see a man hanging onto the poop deck railing for dear life. He finally loses his grip and falls 200 feet into the 28 degree water. The camera follows his deathly descent in a whip pan. At the beginning of the shot, the poop deck and man are real; the rest of the ship is virtual. As the camera pans down, everything in the shot becomes digital, including the falling man and the crowd of flailing, freezing people already in the water. (Ninety-five percent of the digital people in the movie were created with Alias and Softimage software. Occasionally, as in shot 146, Peter Nye would create some LightWave people who got along swimmingly with their digital cousins.)

Frank Aalbers was responsible for tracking this shot. Aalbers became known as "Eagle Eye" because he could track the most difficult

shots by eye. For SS140, once the camera whip pans, there is nothing to track to—the background is pure green screen. Still, Aalbers nailed the motion while matching the camera blur. The final effect is seamless and the shot is a perfect example of Cameron's Vision of telling the Titanic story from onboard a "drowning ship."

And of those first-class LightWave animators who helped meet and surpass expectations in the service of the *Titanic*, many were put out to sea. But don't worry, some of them have already discovered new waters for launching their considerable talents (see "TekMasters," page 18).

As for James Cameron, throughout all the budget bashing and deadline gnashing, he did not compromise his Vision—he achieved the look, the story, and the performances of a masterpiece. And only Cameron knows if blockbuster ticket sales or an armload of Oscars for his efforts could be as satisfying as fulfilling an impossible dream.

Dick de Jong and Molly Dinkins produce video documentaries and animations for Multimedia Associates in Austin, TX, and can be reached at mma@eden.com.

A Class Act



The brainchild of Stan Winston (four-time Academy Award-winning creature creator) and Scott Ross (former ILM & Lucas Film vice president), and James Cameron (writer/producer/director and *Titanic* hero), Digital Domain opened for business in 1993. Their objective was to establish a convenient, world-class, full-service visual effects company near the Hollywood studios. Since opening, Digital Domain has created visual effects for feature films like *Apollo 13*, *True Lies*, *Dante's Peak*, and *The Fifth Element*.

When the original six LightWave artists arrived in March 1996, they were dubbed the NT team because they were using DEC Alpha-based Carrera machines running on the Windows NT operating system. (For a more complete story about Digital Domain and the NT team check out the cover story in the premiere issue of *NewTechniques*, April 1997.)

When the NT team and LightWave were considered for *Titanic*, it was a case of life imitating art as they found themselves in the middle of a microcosm of a class society, albeit benign. Traditionally, visual effects shots for films were produced with scale models and motion control cameras (think of this as "old money"). Any computer-generated imagery was rendered on expensive SGI workstations (these are the "nouveau riche"). The NT team plays the role of the brash working class trying to gain respect. (Considering their DEC Alpha machines, maybe they should be called middle class.)

As production on *Titanic* progressed, the NT team and LightWave gained the respect of the upper classes and upper management. The testament to how far they have come is up on the screen—almost as much as what you don't see as what you do. In shot after magnificent shot, LightWave is blending seamlessly with old money (beautifully detailed models) and with the nouveau riche (dynamic digital water). *Titanic* is truly a class act.

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TOP 10 TIP-OFFS YOU'RE NOT A GOOD ANIMATOR:

Excerpts from forthcoming humor book "RENDER GUARDIAN!" by Willie Lloyd, LightWave Animator/3D Humorist, williamlloyd@aol.com

10. Your computer does not have vocal recognition or artificial intelligence hardware, yet it pleads with you to give up your profession.
9. You think INTER-LACED DISPLAYS are frilly garments seen in Victoria's Secret windows.
8. The frequent Client suicides in your animation viewing suite.
7. You can't figure out why your dongle doesn't have cream filling.
6. When you design custom 3D objects you're only accurate within 358 degrees.
5. You apply complex texture maps to objects with wallpaper paste.
4. Your last customer figured out a way to wrap fish with your demo reel.
3. The FCC passes regulations that restrict television stations from broadcasting any programs containing YOUR animations.
2. Whenever you call to request reference letters from past customers, they begin to curse in ancient Latin languages, causing your phone to levitate.
1. That "Triple Your Money-Back" satisfaction guarantee you came up with has put you \$3 billion in debt after three months in business.

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INNOVATIVE LIGHTWAVE 3D APPLICATIONS FROM OUR LIGHTWAVE MUSE

WAVES

Understanding the Content Directory Structure.

Content Directory TRYING ONE MORE TIME...

BY JOHN GROSS

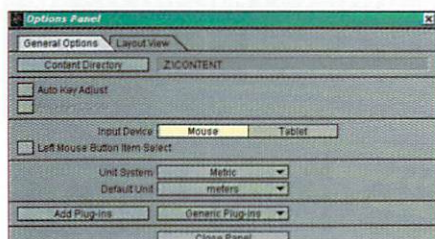


Figure 1:
The Content Directory button
is located in Layout's Options
panel.

On numerous past occasions I have written about Content Directory structure, but I am convinced that practically nobody properly understands the concept. Why do I think this? On too many occasions I have been asked to render some things that were created outside of Digital Muse. After being told that "everything was set up for a Content Directory" and being sent the scenes, objects, and image files, I tried to load the scenes and was repeatedly asked by LightWave 3D to try to locate objects and images. This is an undeniable sign that: a) you don't have your Content Directory set up right, or b) you didn't have your Content Directory set up right when you created your objects and/or scenes. I'm going to give it one more shot and hope it sticks. You will appreciate it in the long run.

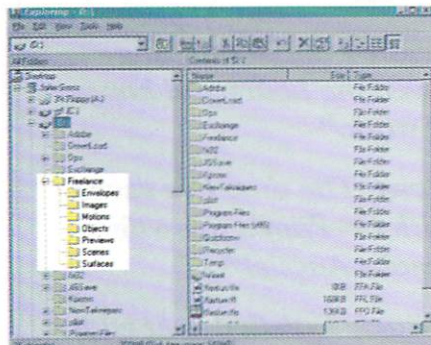


Figure 2:
Any directory that contains
the appropriate directories
can be used as a Content
Directory.

Let's start with a little background...

A long time ago in a galaxy far away, LightWave 3D could be found on only one computer platform—the lonely Amiga. Located on the Amiga hard drive, in a directory called "NewTek," could be found the following directories: Scenes, Images, Objects, Motions, and Envelopes. . . Sound familiar? If you loaded a scene, LightWave automatically looked first in the NewTek/Scenes directory. Similarly, loading an object would default you to NewTek/Objects. Even though nobody knew it, LightWave had a built-in content directory structure. It was set to the main NewTek directory. So the Content Directory, according to LightWave, is that directory that

contains the Scenes, Images, Objects, Motions, and Envelopes (and later, more) directories.

In 1994 it was decided by NewTek that LightWave would go cross platform. In starting to develop the other versions of LightWave, Allen Hastings really wanted to maintain compatibility with older (i.e. Amiga) versions of LightWave plus allow for cross-compatibility between different platforms. He pictured how cool it would be to allow artists to create on one type of machine and bring everything over to another type of machine to render. You could do stuff on your home PC, bring it to work and render on Alphas or SGIs, or take it to a friend's Amiga and have your friend load

it. One inherent problem existed. There were no real similar directory structures between SGIs, Amigas, Macs, PCs, and Alphas (OK, maybe between PCs and Alphas). So how to solve this little dilemma? There was an easy solution. Enable the user to change the content structure so it was all relative! Voilà! The Content Directory button was given an official space on Layout's interface.

Why is it so important for content stuff to be relative? To explain it, let's look at a section of a scene file:

```
LoadObject Objects\007\SphereBlur2.lwo
ShowObject 8 5
ObjectMotion (unnamed)
9
1
-7.5 -1.71 30.552 0 0 0 1.326 1.276 1.276
```

The first line is what we are concerned with. Notice that the location of the "SphereBlur2.lwo" object needed is in the 007 directory located within the Objects directory. The same object would have loaded fine if that first line read instead:

```
LoadObject D:\Content\Objects\007\Sphere
Blur2.lwo.
```

This assumes, of course, that D:\Content is the directory in which the Objects directory is located. The only difference here is that the complete path name of the object file is located on the LoadObject line of the scene file as opposed to the relative path found in the first example.

So, let's say this is how your scene file was written. This would be a dead giveaway that your content directory was set to something other than D:\Content when you first loaded that object. Let's further suppose that you save all of your objects to a Zip drive and take them over to a friend's house to render. Furthermore, your friend doesn't have a D:\ drive, only a C:\ drive and it doesn't even have a directory named "Content" on it and the Zip drive is assigned the letter E:\. Do you picture some slight problems when loading the scene file on your friend's computer?

To complicate things more, let's assume that all of the images associated with the above-mentioned object were originally located on another drive (assigned as F:\) on your system.

Attempting to load the scene file on your friend's computer will result in error messages trying to locate the object and again when attempting to locate the images that are needed.

OK, what are a few measly error messages that only require you to find the new location of an object and the couple of images that are associated with it? It's probably not that big a deal. But let's say that you have 200 objects in your scene and 100 or so images? Now it gets a bit complicated. And how about if you have to render on different types of computers that don't have any access to any of the drives that are listed in the scene file and object files?

OK. Let's simplify. Let's use the CONTENT DIRECTORY!

A Content Directory based on projects might be the best course, especially if you know that you will have to transport your data to another location. Even if you don't transfer all that often, a content structure set up on projects is still a good idea, I believe, for easy archiving and removal of old data.

Let's suppose that you do flying logos for large corporations for a living. Here's how you could set up a file structure to incorporate the Content Directory design:

```
C:\Freelance\Clients (main directory)
AT&T
Envelopes
Images
Motions
Objects
Previews
Scenes
IBM
Envelopes
Images
MotionsObjects
Previews
Scenes
Microsoft
Envelopes
Images
Motions
Objects
Previews
Scenes
```

Now, to make things work smoothly, when-

ever you do work for AT&T, you would change your Content Directory to the C:\Freelance\Clients\AT&T directory. When doing Microsoft work, you would change it to Clients\Microsoft. The key is to make sure that the Content Directory is set before working and keeping all the relevant items (objects, images, etc.) in the proper directories within the proper main content (i.e., AT&T or Microsoft) directories. Assuming you do this right, there should not be one single reference to a full path name for any object or image located anywhere within your scene and/or object files. Of course, you can have as many sub-directories within the main content directories as necessary. For instance, AT&T\Objects could contain directories of various names with objects located within them. The whole secret is that whatever directory you set Layout's Content Directory button to should contain Scenes, Images, Objects, etc. directories.

So, let's say you have your Content Directory set to Clients\AT&T and you create a nice scene file that you are going to take to work to render. Here's how to make it simple:

Step 1: Copy the whole AT&T directory (and therefore all of the objects, images, and scene files that you need) to your Zip drive and stick it in your backpack. Take it to work and stick it in a Zip drive there and copy the AT&T directory to a hard drive (or run it from the Zip. . . it doesn't matter).

Let's say that at home, the full path name of a scene you set up was C:\Freelance\Clients\AT&T\Scenes\NewLogo03.lws. Once you copy everything at work, the new path name is now S:\Bob\Personal\Clients\AT&T\Scenes\NewLogo03.lws.

Step 2: Start LightWave. Go into the Options panel and change the Content Directory to S:\Bob\Personal\Clients\AT&T. Close the requester, choose Load Scene, and you should see the scenes within the AT&T directory. Select NewLogo03.lws and hit OK. Your scene will now load without a hitch. If you get any error messages saying Layout can't find an object or an image, then you

(continued on page 44)

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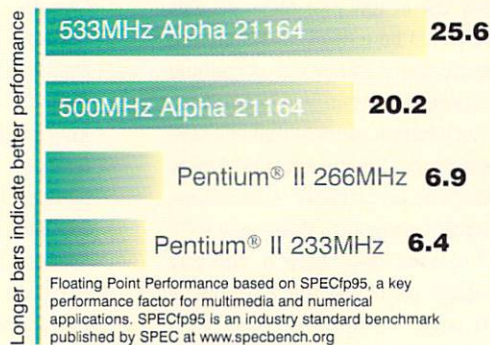
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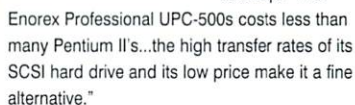
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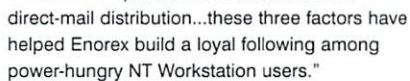
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BY JOE
TRACY

Parscale and Jenison Speak!

PLUS YOUR QUESTIONS ARE ANSWERED

The Video Toaster Flyer has been on a roller coaster ride since the last issue of *NewTechniques*. At NewTek Expo, in a dealer meeting, NewTek announced that all future Toaster/Flyer development was "on hold" pending further action by Gateway 2000 on the Amiga platform. Once word of the announcement leaked out of the meeting there was chaos on the Internet as many people sought to make sense of it. What did it all mean? Was NewTek abandoning the Amiga platform altogether? Was it going to dump its video products forever in favor of animation?

No doubt, the Internet discussions were heated. And three weeks after making the announcement, NewTek's CEO, Dwight Parscale, issued a statement that said, in part: "We remain committed to Amiga technology and believe the future holds the potential for more great things. We have never stopped believing in or supporting the Amiga, our users, or the creative talent that finds ways to use or improve our technology."

A few days later, NewTek's founder, Tim Jenison, gave a speech to the Professional Video Toaster Users Group of San Diego, CA. Jenison echoed Parscale's comments and added that "there is not a day that goes by when Dwight and I and the marketing

people, and some of the engineering people, don't discuss what we can do with new Amiga technology." He further stated that NewTek continues to work on Flyer developments, like HQ6 mode. He stated that NewTek's work on the Amiga platform will depend on what Gateway does with it. He also confirmed that NewTek has also been working on a Toaster for Windows, but would not comment further.

With those reassurances, Jenison turned his attention to other Flyer issues.

DV, FireWire, and Calibar

Jenison briefly spoke about digital video and the Flyer. "Tape noise is the Flyer's worst enemy," he said. "When you use digital

tape, there is no tape noise. So the Flyer is just tickled to death with that signal."

About FireWire, Jenison stated, "I hear from guys occasionally who are working on a FireWire connection to the Toaster." He further stated that the benefit to using it with the Flyer is very little. Even so, there may be some third-party companies working on FireWire for the Amiga.

Jenison also introduced two new additions to the Calibar family. One is a combination NTSC and PAL Calibar and the other is a Serial-Digital Calibar. Both should be on the market within a few months, joining NewTek's NTSC-only Calibar that was released last past summer.

For a more in-depth report on

COMMENTS OR
SUGGESTIONS

email:

jtracy@

main.rosenet.net

Parscale's comments and Jenison's speech, go to the *NewTechniques* pages at www.newtekexpo.com and select "News."

Once again I've received a great batch of questions for this issue. Let's get right to them.

Q: Sometimes when I'm in a clip's Controls panel and using the arrow keys to go forward or backward, it doesn't properly do it. Instead of a smooth playback, I get a jerky one-frame-at-a-time playback that forces me to keep clicking to make it go forward. If I reset the Flyer it works fine. Isn't there an easier way?

A: This is a common, yet random, problem. And luckily for you there are many solutions outside of re-setting your Flyer card. The easiest solution is to press the square stop icon in the same Control panel (Figure 1). Now hold down the arrow keys and you'll see it play back smoothly.

Q: I have an Amiga2000 Toaster and an Amiga4000 Toaster/Flyer. Someone is interested in buying my Amiga2000 Toaster, but only if NewTek will transfer the registration. Is this possible?

A: Yes, it is possible. You'll be required to give the new owner a Bill of Sale and a Letter of Registration Release. On both these documents you must list the serial number of the Toaster card you are selling. In the registra-

tion document you must list your name, address, phone number, and the fact that you are transferring your registration. Both documents must contain your signature. NewTek will call to make sure that the transaction took place before making the changes. The new owner should fax both documents to (210) 341-2140, or send them to NewTek Customer Service: NewTek, Inc., Fountain Head One, 8200 IH-10 West, Ste. 900, San Antonio, TX 78230. After the sale and registration transfer approval, the new owner can take advantage of upgrade discounts (2000 card to 4000 card) and technical support.

Q: Sometimes I have a client working with me and we'll record a 10-minute clip and then it takes 10 minutes to process! What is taking it so long?

A: If you make any adjustments to that clip in the Cut Clips panel, then it has to rewrite all the information to the drive. This includes adjusting your In Point, Out Point, making it Video Only, or making it Audio Only. To get around this, record what you want to use, give it a name then click Process. It should be saved instantly to your drive.

Q: My client gave me his logo on a disk for a video project I'm working on. The problem is that it is in JPG format. How do I get it into the Flyer?



Figure 1

A: Put the disk in your floppy drive. From the Flyer go to Project/Files view. Open up your ARexx directory (RX Tools) and double-click on the Import icon. You'll be asked what graphic you want to display. After making the selection it will want to know where to find the graphic. Use the arrow key above the scroll bar to navigate to your floppy disk and select the graphic. Click OK. After a few minutes the graphic will appear in DV1 or DV2.

I'm working on a feature article for the April issue of *NewTechniques* on how the Flyer is being used in high-end situations (see "Short Takes" on how it was used on the Titanic expedition). If you are using your Flyer unit in high-profile situations, please e-mail me via jtracy@main.rosenet.net so that I can talk with you. Until next time, keep flying!

Joe Tracy is editor-in-chief of NewTechniques. He can be reached at jtracy@main.rosenet.net.

LightWave 201

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BY SCOTT
WHEELER

Project Bird: THE CREATION

The first installment in
the second level of
LightWave courses
—"LightWave 201."

Welcome back for another year of LightWave 3D instruction. This year we will be covering some more advanced topics of LightWave's Layout and Modeler. One area we will most certainly be spending time in is the plug-in structure. As such, I have several plug-ins in mind that we will be using in the near future to finish our class project. They are Particle Storm from

Dynamic Realities and Verticletric from Blevins Enterprises. I consider each of these plug-ins a must-have for serious animators as they are well worth the cash. Let's get down to business.

This year's project will involve a fair amount of modeling, so let's start there. Open Modeler and pull up the Display Options Panel [d]. We need to make sure we are all using the same grid size and measurements, so double check that in your Options panel.

1. In the Options Panel, Orientation should be set to Quad Logo (XY). Preview Type, Visibility, and Input Device are personal choices on how you like Modeler to look so you can leave them alone or change them to what you like. Unit System should be Metric with a Default Unit of Meters. Grid Units should be 1, 2.5,

5 with a Grid Snap of Standard.

2. Now that we're all measuring the same, let's zoom in [$>$] until the grid size indicator on the lower left side of Modeler reads 2.5cm. Our final bird will be about 25 centimeters long so at the magnification level we can get a large portion of the object in view while being close enough to make minor movements.
3. For me, the beginning of all MetaForm objects is the Box [shift - x]. In the Top View place the cursor at X: 0cm Z: 7.75cm. Note that there is no Y-Axis number since the Y-Axis is not represented in the Top View. While holding down the left mouse button, drag the box until the Position is X:

1.75cm Z: -1.75cm.

4. Since we don't want our bird to look like it just got run over by a steam roller, let's add some depth to the box. In the Face View, place the cursor at X: 1.75cm Y: 1cm and left-click. To finish the box, right-click at X: 1.5cm Y: -2cm. Pressing the Space Bar will cancel us out of Box Mode.
5. Now let's add a little character to our bird body by dragging [ctrl - t] the points in the Left view located at Y: -2cm Z: -1.75cm up with the right mouse button until the Offset equals Y: 5mm X: 0m. If all has gone well, you should have an image similar to Figure 1. Trust me, it gets much more exciting than this, but, ya gotta start somewhere.

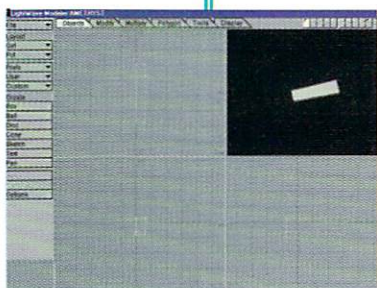


Figure 1



Figure 2

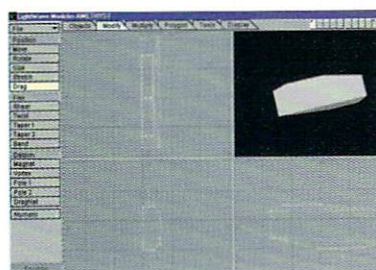


Figure 3

6. Now that we have the base shape for the body, let's add a little detail. In the Left View select the top and bottom polys only. To add some roundness to the stomach and some arch to the back we need to Smooth Shift [shift - f] the selected polys. In the Smooth Shift panel type in 5mm for Offset and make the Max Smoothing Angle 0.0. Our bird body should round off so that it is fatter in the center of the body than it is at the edge. To accomplish this, we need to drag [ctrl - t] the outer edges of the selected polys in toward the center. By leaving the polys selected we can be assured that we will only drag points on the polys we want.

7. In the Top View left click at X: 1.75cm Z: 7.75cm and drag the points X: -5mm. Do the same to the points at X: 1.75cm Z:-1.75cm. Our model should now look like Figure 2. Still not very exciting, but we're getting there.

8. In the Left View, Drag the edges of both the top and the bottom polys until you have an image that resembles Figure 3.

The Tail

9. Let's add a tail to our little friend. Since all good models are aligned facing the Z-Axis we know that the beginning of the tail must be the rear facing poly at Y: -5mm Z: -1.75cm in the Left View. With just this poly selected, Smooth Shift [shift - f] it out with an Offset of 5cm twice.

10. You should now have two squares extruded off the back of the body. As you've probably noticed by now when building an object to be MetaFormed I make a lot of Smooth Shifts and Point

Drags to get the desired shape. So, with that in mind, let's Drag [ctrl - t] the points at Y: 7.5mm Z: -6.75cm in the Left view up 2.5mm on the Y-Axis. Then let's Drag the points at Y: -1.5cm Z: -6.75 to an Offset of Y: 2.25cm Z: 1cm. You can now start to see the profile of the tail taking shape.

11. Finish the profile by dragging the points at Y: -1.5cm Z: -11.75cm to an offset of Y: 5mm Z: 2.5mm and the points at Y: 7.5mm Z: -11.75mm to an Offset of Y: 0mm Z: 3.75mm. Your profile should look like the Left View of Figure 4. Complete the tail by dragging points around on the Top View until they resemble the orientation in the Top View of Figure 4. The precise locations of the points are not as important as the overall look, so don't get too carried away with matching exactly.

The Wing

With the body and tail done we can focus on adding a wing to our creation. A bird without wings is like lunch.

12. Select only the poly on the +X side of the body at X: 1.5cm Z: 3cm. We will make this poly the main connection point for our wing into the body. In order for our final model to have a smooth transition point we'll Bevel [b] the poly. Set the Inset to 7.5mm and the Shift to 1cm and click OK. Your model should look like Figure 5.

13. We want to be able to mold our wing into a good shape so we need to create enough detail in our MetaBox to allow for this. We can accomplish this by making a series of Smooth Shifts [shift - b]. Set the Offset to 1.1cm



Figure 4



Figure 5

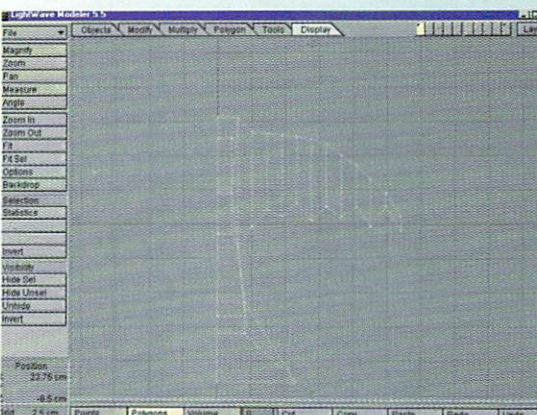


Figure 6

and the Max Smoothing Angle to (0.0) then click OK. Repeat the Smooth Shift nine times so that you end up with a box with 10 segments off the side of the body. Press the forward slash [/] to deselect all polygons and use the Move [ctrl - t] tool to align the points of the wing

in the Top View so that they match Figure 6.

14. To finish off the wing, we need to add a slight tapering at the tip. In Points Mode [ctrl - g] drag a lasso selection [Right Mouse] around the entire wing. Make sure you have all the points start-

LightWave 201

ing with the end of our first wing bevel to the tip of the wing itself.

15. Go to the Modify Tab and click on Taper 2. Since we want to affect the height of the wing at the end we should go to the Left View and place our cursor in roughly the center of the selected wing points Y: -5mm Z: 3cm. Click once to set the center position for the Taper 2 tool. Pull up the Taper 2 Numeric Requestor [n] and set the Factor on the Y-Axis to 30% making sure the X and Z axis stay at 100% and click Apply. Hit the Space Bar to exit Taper 2 mode and forward slash [/] to deselect all points.

The Head

At this point your bird should look like Figure 7. It looks good so far, but since we want our birds to be alive, let's add a head.

16. We'll create the basic shape of our head by selecting the +Z facing neck polygon Y: -3mm Z: 7.7cm and Smooth Shifting [shift - f] it three times with an Offset of 1cm and a Max Smoothing Angle of 0.0. Figure 8 shows the final Drag locations. Try to match the Left side first and then move to the Top View. The chart below lists the Drag locations in both the Left and Top Views and their corresponding Offsets. But before you read any further, try it on your own first; after all, this is supposed to be a learning experience.

Left View

Start Location	Offset
(Y: -2cm Z: 8.8cm)	(Y: 7mm Z: -3mm)
(Y: -2cm Z: 9.8cm)	(Y: 7mm Z: 0mm)
(Y: -2cm Z: 10.8cm)	(Y: 1cm Z: 0mm)
(Y: 8mm Z: 8.8cm)	(Y: 0mm Z: -6mm)
(Y: 8mm Z: 9.8cm)	(Y: 4mm Z: -1cm)
(Y: 8mm Z: 10.8cm)	(Y: 2mm Z: 8mm)

Top View

Start Location	Offset
(X: 1.5cm Z: 11.5cm)	(X: -6mm Z: 0mm)
(X: 1.5cm Z: 10.7cm)	(X: -5mm Z: 0mm)
(X: 1.5cm Z: 8.4cm)	(X: -5mm Z: 0mm)
(X: 1.5cm Z: 8.2cm)	(X: -5mm Z: 0mm)

Hopefully you used the charts above as a guide to check your work and not as a blueprint for creation. Either way we're all in the same place now and that's all that matters.

17. Figure 9 shows the final steps for the creation of the beak and head shape. The two selected polys are the ones you'll need to work on to finish the model. When you have finished the head, press the forward slash [/] key to deselect all polys and activate point mode [ctrl - g].

18. If we built the bird correctly, all the points on the left of the model should be exactly on the centerline. But, since we need to make a mirror image of the model to finish it, let's make sure this is true. In the Face View place the cursor just inside the model to the right of the centerline and Lasso Select [Right Mouse] and drag to the left of the centerline, down the left side of the model and back inside the right of the centerline, encircling all the edge points. Press [ctrl - v] to Set Value

with Axis set to X and Value set to 0m press OK.

19. With that done we can press the forward slash [/] to deselect the points and activate Polygon Mode [ctrl - h]. Drag out the same lasso selection you used to select the points and cut [x] the polys on the centerline off the model. Still in the Face View activate the Mirror Tool [shift - v] and right click with the cursor on the centerline (X: 0m). You should now have a whole bird.

Finishing the Bird

20. To finish things out, Merge [m] the points on the centerline together. Save a copy of the MetaBox under a suitable name and MetaForm [shift - d] the model twice with a Max Smoothing Angle of 179.0 and fractal of 0.0. Name the polys [g] Birdy and save the finished Model as "Birdy.lwo." Your finished Model should look like Figure 10.

As a final note, we didn't spend any time trying to separate out any surfaces since we won't need any for the final animation. If we needed separate surface names, we would have named as many as possible in the actual MetaBox

since there are less polys to worry about. We'll save that for later.

In our next class, we'll put Bones in our bird and make her fly!

Scott Wheeler, an animator at Area51 can be reached at uberscott@uberfx.com.

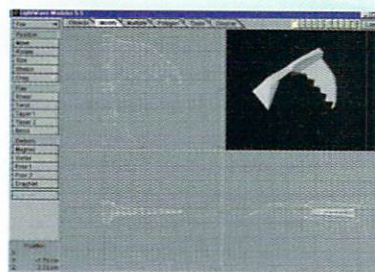


Figure 7

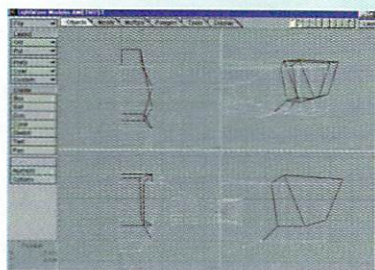


Figure 8

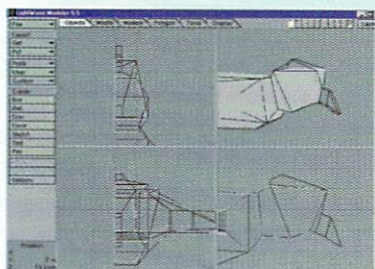


Figure 9

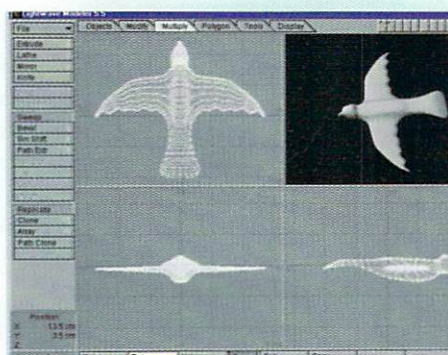


Figure 10



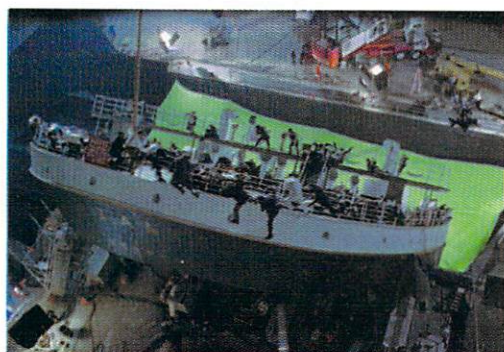
WAVE F/X

LIGHTWAVE SUCCESS IN THE COMPETITIVE TV & FILM F/X MARKET

Building the stern of the
Titanic in LightWave

BY TOM
WILLIAMSON

SS139: A LIGHTWAVE JOB OF TITANIC PROPORTIONS



The stern of the Titanic model, known as the "ejecto-poop." The shot started out as a live-action plate with the camera looking down on the deck with stunt people flailing about. After the shot was finished, the only portion of the plate remaining was a section of the poop deck and the left side of the washboard. Notice the green screen.

SS139's unsung heroes

The Digital Ship Extension Team

Richard Payne, Fred Tepper, Karl Denham,
Andy Lesniak, Alan Chan, Frank Aalbers,
Peter Nye, Rusty Ippolito

Sim Sequence

Fred Tepper, Greg Teegarden, Meni Tsirbas,
Karl Denham, Andy Lesniak

Additional Support

Grant Boucher, David Stern, Franco
Pietrantonio, Zachary Tucker, Markus Kurtz,
David Bleich

Titanic. It's being called the biggest movie ever made. It is certainly looking like one of the best movies ever put on film. When director James Cameron approached Digital Domain with the task of recreating one of maritime's greatest disasters, a number of eyebrows were raised. This was not going to be any ordinary film, and it certainly wasn't going to have any ordinary effects. Although most of the *Titanic* ship effects were accomplished with models, there were a number of digital ship shots. The LightWave community can take great pride in the fact that all the digital ship effects (digital ship "extensions") were done with our favorite piece of software—LightWave 3D. When the schedule on *Titanic* began to get really crunched, James Cameron and effects supervisor Rob Legato approached the NT team at Digital Domain with some interesting and incredible challenges. Fred Tepper and the NT team were up to the task, and were soon hip deep in the oceanic disaster.

The Effect

This issue's effect is SS139, "Jack and Rose against rest of ship." This shot involved the ship's stern lifted 300 feet into the air as our heroes dangle precariously on the rails. The primary people behind the shot were Alan Chan, Richard Payne, and Tepper. The plan was to take the live action plate and render missing pieces of the ship with LightWave. Before any digital shots of the Titanic were going to be possible, a model had to be built.

Coincidentally (or was it just fate?), Tepper had quite a bit of experience with modeling the Titanic (see "Creating Titanic: Visions of the Unsinkable," page 22).

The Modeling

Modeling the ship was a colossal task requiring eight months of work. Working from a wall-mounted 24-foot copy of the original blueprints, the modelers built an incredibly detailed and faithful reproduction of the massive ship.

Payne was responsible for the hull, a far greater task than it seemed.

"I said, 'OK, I'll build the hull,'" said Payne. "It certainly didn't seem like that big of a deal."

To illustrate the magnitude of the task, consider this: The geometry of the rivets alone constitutes over 20MB! And the rivets had to be split into 18 separate objects, which were parented to the hull. Why not use bump maps, you say? When you see some of the shots of

this awesome model you won't wonder (if you can spot them). There are shots with light raking down the entire side of the vessel, and each little rivet casts its own shadow. When the ship was finally done, it totaled a whopping 2.3 million polygons (yes, million—seven zeros). The image maps for the ship totaled between 85 to 90MB, and that was after extreme optimization. "My original map for the deck was 45MB as a PSD," said Payne "but it got down to about 8 to 9MB as an IFF." Most of the maps were dropped down to 8-bit to save memory. Another testament to the amount of data being pushed around on the film: It took the scene we're covering here 19.5 minutes to load.

The Set Up

The shot started with a live action plate shot in Rosarito, Mexico. In addition to models and matte paintings, the *Titanic* also existed as scale and semi-scale sections. The one used in this shot was a huge section of the stern of the ship built with hydraulic actuators (the "ejecto-poop," as it became known). This shot started as a live-action plate looking down on the ejecto-poop deck with stunt people flailing about. The scene was set up primarily by Alan Chan over a period of six weeks. Once the 97 frames (77 frames of the shot plus 10 frame handles on the head and tail) of the plate were scanned, the sequence was tracked. This enabled the artists to extract camera data and moves that could then be translated for use in LightWave. Then the footage was analyzed to determine which portions of the ship and action to keep and which would need replacing or augmenting. It was determined that most of the ship would be replaced in this particular shot. The only portion of the plate remaining is a section of the poop deck and the left side of the washboard.

"We retained the washboard because the stunt people's legs were dangling in front of it," said Chan. "If we had replaced it we would have had to do extensive rotoscoping." The rest of the shot is mostly LightWave, including the people in the background. To actually achieve the results that Cameron envisioned, the hull of the ship had to be dramatically tapered. This gave it a forced perspective. When asked about the challenges of the shot, Chan replied, "Jim Cameron had a very clear vision in his mind about how each and every shot in *Titanic* should look. The single biggest

challenge definitely had to be matching the shot to what Jim saw in his mind." The final step was to match-light and integrate the ship so it could be seamlessly composited. The digital ship was rendered as elements, which were then composited together in Nuke, Digital Domain's proprietary compositing system.

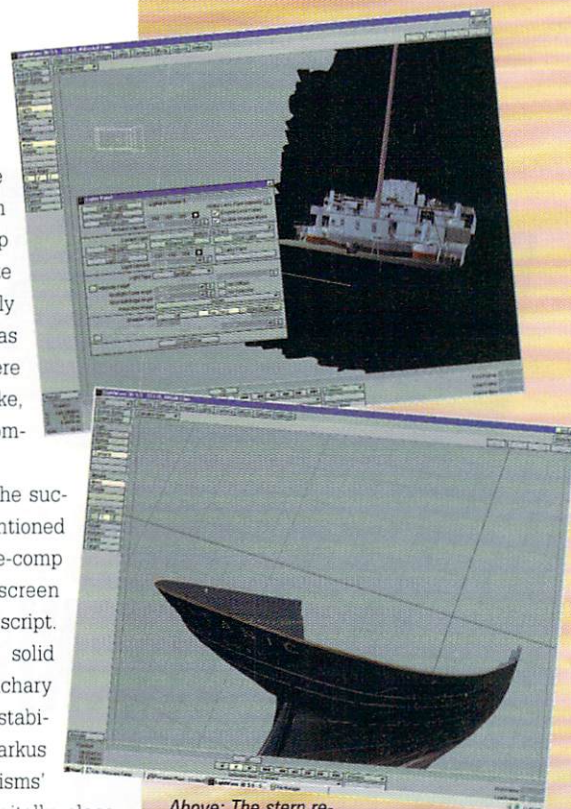
Some other people crucial to the success of this shot should be mentioned also. David Stern began the pre-comp procedures, including green screen removal setup and a basic Nuke script. Franco Pietrantonio delivered a solid tracking solution for the ship, Zachary Tucker provided additional 2D stabilization for the elements, and Markus Kurtz and David Bleich used Prisms' procedural particle system to digitally place swimmers in the water.

Rendering

At the peak of production, the NT group had upwards of 70 500MHz Carrera Alphas rendering frames, and about half a terabyte of space for storage. Although LightWave was rendering only elements that would be composited later, the rendering times were still impressive. For this shot the time ran as long as 50 minutes per frame. It doesn't take a lot of imagination to understand why. Once all the elements were rendered they were passed on to the talented Nuke artists and the shot was completed.

With a film of this caliber and status it seems a little amusing (at least to me) that some of its finest effects were brewed up with one of the least expensive and underrated 3D packages on the market. With the creative forces of James Cameron and Digital Domain, *Titanic* can't lose (but if it should, think of what fun the press will have with bad puns). This film will undoubtedly be a "shot in the arm" for LightWave. We all know what it's capable of—now the rest of the world will know, too, if they can separate reality from the effects, that is.

Tom Williamson is effects supervisor for Computer Café, Inc. He welcomes your questions and comments about LightWave effects. He can be reached at tom@computercafe.com.



Above: The stern recreated in LightWave.
Below: The recreation of the hull in LightWave.

Terms of the Trade

Rotoscope—The process of hand animating an element. Most commonly used to create mattes, but it's also the technique used for electrical effects, lasers, etc. The name comes from the instrument that was used to create these effects with classic film techniques.

Head and Tail—The beginning and end of a strip of film.

Handles—Extra frames added to the beginning and end of a shot to allow for flexibility in the edit.

Scanning—The process of acquiring digital representations of film frames.

Tracking—The process of analyzing a portion of a frame and getting that portion's X and Y coordinates as the sequence progresses.

Composite—The process of putting an element onto a background. For instance, layering a ship on top of a space scene.

Reviews

CANDID OPINIONS ON THE LATEST PRODUCTS AND PLUG-INS

FXtreme and FXtremePRO

BY BRIAN TATOSKY

FXtreme and FXtremePRO are the future of LightWave 3D. Not just for the sheer amount of power, flexibility, and control they give you for mesh deformation and point displacement, but for the elegant and smart user interface as an example of what we might expect to see more of in LightWave's future. Lyle Milton, who brought us MacroForm (the powerful spline-based modeling tool set), has developed what I consider to be an awesome Layout plug-in package for advanced displacement effects. Unveiled at the 1997 NewTek Expo, FXtreme and FXtremePRO create "custom mesh deformation effects," a MacroForm for Layout. But they do so much more.

You start in FXtreme with built-in FX Modules such as FlexFX, XFormFX, and ControlFX. All modules contain "Actions," such as Bend, Move, Warp, Twist, etc. Actions are logically put together in a well-organized, color-coded hierarchy to produce an "Effect." Effects are combined to produce the mesh deformation effect you want. The hierarchical display easily shows you what is going on in even the most complicated deformations and provides a good format for working with Actions and Effects.

Individual Actions and Effects or groups can be infinitely added, deleted, re-ordered, temporarily turned off, named, and saved independently of the mesh for application to other objects. Most importantly, each action in the hierarchy can be adjusted at any time without having to undo or deconstruct any other part of your effect. You're not only able to produce powerful effects, but you can also create libraries of effects for multiple uses and reuses.

FXtremePRO builds on this solid foundation of tools by adding

MorphFX, MetaEffector, and spline patch controllers. It also adds an extensible architecture open to future FX Modules being developed as you read this. Imagine displacements happening only to user-defined, selected groups of points down to individual point-level control over displacement animation.

Ever drooled over Alias|Wavefront's Layout object deformations? Imagine that for a lot less money! Imagine expression-like displacements that vary according to conditions such as velocity, position or rotation, without needing to program endless mathematical equations. Want to do that flowing super-hero cape you've only thought the so-called "big-boy" packages could do? All this and more I found available through FXtremePRO.

At every turn, FXtreme and FXtremePRO give you the maximum amount of control possible over your object. Nearly everything is key frameable. You can make real-time key frame adjustments in an animated OpenGL Preview with 5.5 style animation

controls, use numeric requesters, or use the timeline motion graph. No pop-up requesters clog up or obscure the screen. The interface smartly shows you what you need to see, when you need to see it, and reflects the sheer amount of apparent thought and care put into this plug-in. It's now obvious to me that the people at One and Only Media are not just programmers, but artists with the end user in mind at all times. They've given us the control we've only dreamed of until now, balanced by a clean, efficient GUI.

Many of the Actions and Effects are based around splines, à la MacroForm, so already understanding this particular flavor of controller gives you a head start in using FXtreme and FXtremePRO. But if you don't know MacroForm yet, have no fear. I found the interface so well laid out and the concepts so easy to grasp that my biggest problem is going to be restraining myself from just going wild with the near infinite variety of creative possibilities.

FXtreme and FXtremePRO should be available now.

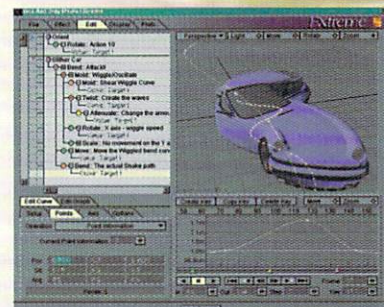
LIGHTWAVE 3D TOOLS

FXtreme

The LightWave Lab Vols. 1 & 2

FLYER AND TOASTER TOOLS

Snapshot



The FXtreme interface shows you what you need to see, when you need to see it.

CONTACT INFORMATION

FXtreme and FXtreme Pro

One and Only Media

FXtreme \$350

(Intel, Alpha, Mac)

FXtremePro \$675

(Intel, Alpha, Mac)

Web:

<http://idt.net/~oammedia>

mail:

One and Only Media

P.O. Box 218

Vauxhall, NJ 07088-0218

(908) 964-4546

Circle Number 193

The LightWave Lab Videotape Tutorials

Volumes I & II, Characters

One of the special attractions at this year's NewTek Expo was the highly praised course, "The Casper Session—Advanced Character Modeling and Animation." The instructors, Susan Ishida, Joe Clasen, and Ken Wilder headed up the OCS team that created the ghostly animation for the made-for-video movie, *Casper: A Spirited Beginning*. If you weren't able to attend this standing-room-only class, these tapes are your second chance. In fact, Volume 2 was an integral part of the class.

On the tapes, Ishida takes you step-by-step through the process of modeling a character using MetaNURBS, the powerful modeling tool that Fori Owurowa designed for LightWave 3D. Volume 1 focuses on creating the head; Volume 2 builds the body. Also included in the first tape are tips on using Morph GizmoPro for facial animation and working with Photoshop to create texture maps. Volume 2 contains tutorials on Puppet Master and short descriptions on preparing your audio for lip syncing using Cool Edit and Magpie software.

Let's cut to the chase. Should you buy these tapes? If you use LightWave and are serious about learning character modeling and animation, the answer (in the spirit of this issue) is a titanic "yes." Even if you aren't thinking of attempting character animation, buy these tapes. Ishida, who Owurowa has crowned the "Queen of MetaNURBS," is your guide in the tutorials. Her straightforward, comfortable style of illustrating the techniques is so clear that you will have visions of becoming the next Michelangelo sculpting your digital David.

After a good, brief introduction on the power of MetaNURBS, Volume 1 jumps right into modeling the head where you are taken step-by-step through the process of creating a head complete with eyelids and lips. All along the way, she explains what she is doing and why.

Before you know it, with points and polygons and the magic TAB key, she has sculpted a beguiling face with the cutest little nose. I was amazed at her skill. But more importantly, after watching and listening to her, you feel like, "I could do that."

In Part 2 of Volume 1, Ishida brings the model, along with a few target objects, into Morph GizmoPro and explains how to set up a Morph Gizmo sequence file. You begin to better appreciate some of the modeling choices she made when you see how she creates a variety

of emotions with different groups of targets.

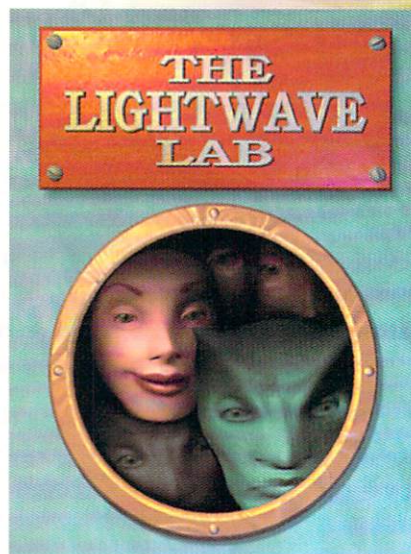
Next, Ishida works in Photoshop to paint texture, bump, and specular maps for three faces: a young girl, an old woman, and a marionette. Finally, she demonstrates how to apply the maps in Layout.

Volume 2 begins with a return to Photoshop. This time Ishida explains how to align photos (side view and head on) to build reference images for modeling. She then models the body in the same thorough manner as before, softly coaxing and coaching you along the way. It's amazing to see her push points and quadrangles around and form an unsightly polygonal creature that only a modeler could love. Then she hits the TAB key to activate the transforming MetaNURBS effect, and voilà, the ugly duckling turns into a curvaceous swan.

Knowing that she will be using Puppet Master, Ishida describes how to name the surfaces of the model to facilitate in cutting it up. If I have one problem with the tapes, it is the amount of time she takes to illustrate the sectioning process. You get the idea after one side of the body, but she proceeds to repeat the steps on the other half. I could suggest that you fast forward past this part, but you might miss something. Ishida has the engaging style of adding little hints as she works her way through repetitive tasks. Just when you are about ready to fast forward, she will offer a nugget of information that you don't want to miss.

The next section is on Puppet Master, a plug-in designed by Owurowa that is a must-buy if you are planning on doing serious character animation (see the review in the July/August 1997 *NewTechniques*.) Watching this part of the tape, I realized again that these tutorials require a fairly solid knowledge of LightWave. Even though Ishida's presentation is as clear as a bell, she still assumes you know your way around Modeler and Layout. In all, both of these are fine tutorial tapes.

BY
DICK DE JONG



A video primer on
character animation

CONTACT INFORMATION

The LightWave Lab
Volumes 1 & 2
Characters & Character Two
\$39.95

mail:
Joe's Digital Bar & Grill
P.O. Box 1665
Westminster, CA 92683
(818) 464-3144

Circle Number 194

BY KEVIN HANLEY

Snapshot

As I become lazier and lazier, the third-party software providers seem to keep accommodating me with products that automate many of my everyday Toaster/Flyer tasks. Such is the case with Snapshot from DVS Direct. The whole idea of Snapshot is to automate the process of grabbing Framestores or Flyer Stills and saving them to a folder. With the Snapshot GPI foot control, you don't even have to go anywhere near the keyboard or mouse once you set up the Snapshot software. All you have to do is set the photo and camcorder, then press the foot pedal. Snapshot takes care of the rest of the details.



Snapshot automates the process of grabbing Framestores or Flyer Stills and saving them to a folder.

CONTACT INFORMATION

Snapshot
\$69.95

email:
www.dvsdirect.com

mail:
69 Beaver Dr.
Suite 110
DuBois, PA, 15801
(800) 379-7267

Circle Number 195

The GPI foot control cable connects to the second mouse port of the Amiga. If you already have a GPI device attached to this port, there is an RCA connector attached to the Snapshot connector. The software comes on a single floppy, and installation couldn't be more straightforward. To use Snapshot, you simply select

"Snapshot" from the tools menu, and the software asks a few questions. After answering each question, you are ready to use the GPI foot control to save your Frames or Stills. Snapshot saves the files into a user-selected directory with a basename followed by a 001, 002, etc. This way you can select all of the contents of the directory, drag the files into your project, insert dissolves and a CG or two, and you're done! All that's left is to write the invoice, which Snapshot won't do—yet.

Snapshot is everything I have wanted for several years, and more. I like the fact that it prompts you for the quality setting for Flyer Stills, rather than assuming that the Record Quality setting has already been chosen manually. Snapshot prompts you for the number of stills you will be saving, and then shows a status bar as you work. When you're finished, it tells you how long it took. If you're charging by the photo, you will know how much you are making per hour. You'll also know how quickly things go when you don't have to go back to the mouse after every photo! Unlike some

third-party programs, Snapshot allows the use of subdirectories (i.e., a folder within a folder). If you plan to stay organized, this is mandatory. Snapshot also gives you the option of using motion removal while saving Framestores.

Like the product itself, the manual is simple and easy to understand. It walks you through the process of using the Snapshot, and suggests a few additional uses of the product. For example, you can use Snapshot to trigger dissolves and other effects. If you use the Toaster as a live switcher, this is a great feature of GPI.

Overall, I feel that Snapshot is a very solid investment. One of the best things about the Flyer is that there are so many small, inexpensive add-ons from third-party companies that make it better and better. Snapshot is such a product.

DVS Direct is working on a new version of Snapshot that will use its own interface, and I have a wish list for other features. For large projects, it would be nice for Snapshot to create multiple folders within the user-selected directory and save maybe 40 or 50 into each folder, switching to the next folder automatically while saving files. I would like to see Snapshot be able to create a project automatically, inserting a dissolve or other preset effect between each still. I'd also like to have Snapshot make a pot of coffee just before I get to the office, but I doubt that it would be priced so low if it did!

With Snapshot, you'll save enough time to cover the \$69.95 price in one or two photo/slide sessions.

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SURFACE EFFECTORS/DSFX 1.1

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Circle Number 228



loaded something from outside the original content directory when you first set up the scene. If that happens, you are not doing it right! Everything you need should be within the directories located in AT&T and LightWave should find them all.

It's easy to catch a mistake when you are setting up your scenes. If you load an object or image that is outside of Clients\AT&T (in this case), you will have a problem. For instance, if you need to use an image that is in the Microsoft\Images directory on one of your AT&T objects, saving that object will result in a reference to an item (the image) outside of the content directory. This won't be a problem on your machine at home, but while at another location, you won't be able to locate the image, because it won't exist (unless you have recreated your whole directory structure).

Sounds complicated? Actually, it's really easy. And you always know if you have the Content Directory set up right in the first place. Let's say you want to load a Microsoft scene, but when you go to Load Scene, all you see are AT&T scenes. STOP! Do not try to find the scene you want. Instead, cancel and go to the Options panel. Change the Content Directory to what it should be, then try again.

An added benefit of setting it up by projects or clients or something similar is that you can back up just the stuff you need and remove it from your drive easily. Not doing any more IBM logo work? Get rid of it!

The main gotcha that you will run into in this type of set-up is with images and/or objects that you use for a lot of things. If you have a reflection map, for instance, that is used all the time, you will need to copy it to each client's Images directory in order to keep things running smoothly.

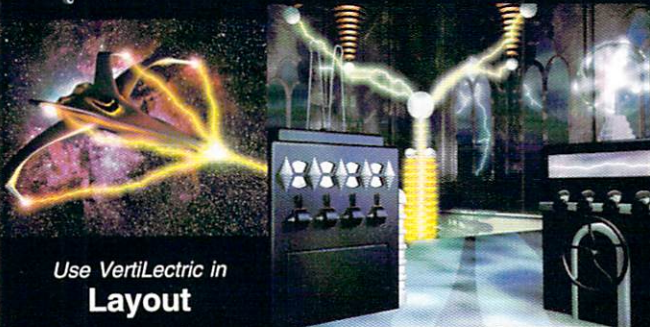
Well, I hope that this has shed some light on why the Content Directory structure is extremely important and why it's a pet peeve of mine. Next time, I will talk a bit about how we've set up our structure at Digital Muse.

John Gross is co-owner of Digital Muse, a Santa Monica, CA-based effects facility. Send email to john@dmuse.com.

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Tutorial

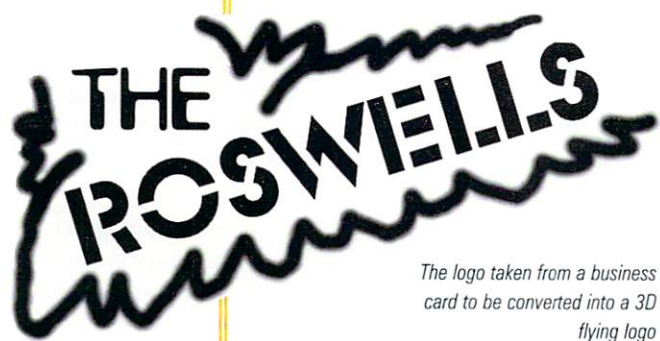
A STEP-BY-STEP GUIDE TO CREATING MORE PROFESSIONAL PRODUCTIONS

BY PATRIK
BECK

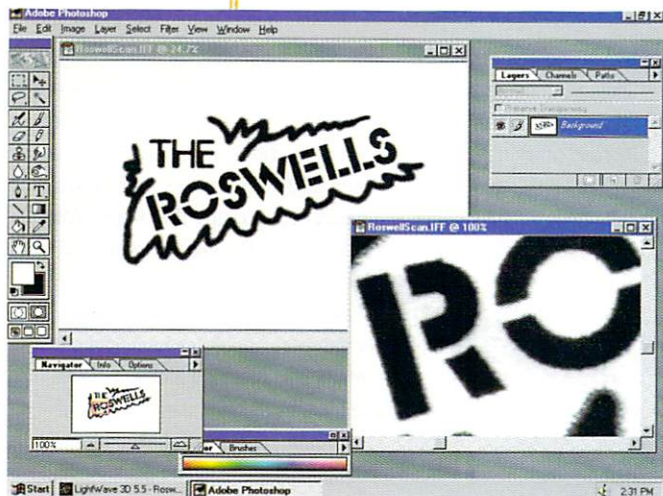
THE FIVE-MINUTE LOGO

Bringing a logo
into the third
dimension

Sometimes you need to do a logo job for a client who is on a limited budget. Here is a technique for taking a complicated logo and giving it some 3D depth. It is quick, professional-looking, economical, and can be done in LightWave 3D in less than five minutes. Let's get to work.



The logo taken from a business card to be converted into a 3D flying logo



The image scan of the logo needs to be cleaned up. The image looks clean but a close-up view reveals some random gray pixels that could later cause problems.

The basic idea is that we digitize the logo and apply the logo image as a map on a flat, four-sided polygon. By applying the same map to several different surface attributes we give the polygon the appearance of being much more complex. Though there is some fairly sophisticated surfacing used in this process, it has to be the simplest model ever built for a tutorial.

The Basic Requirements

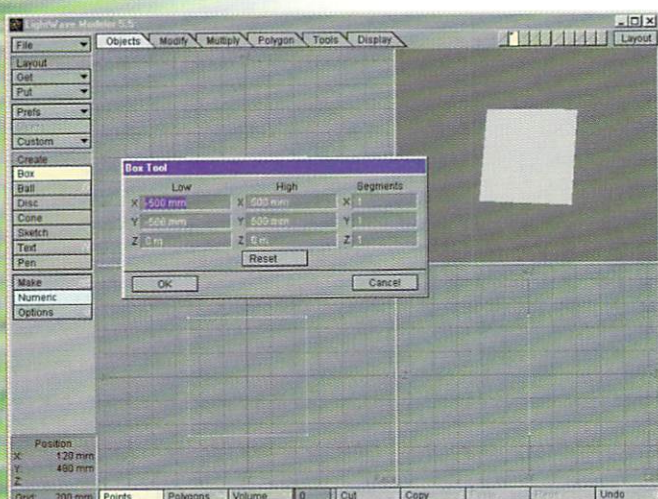
We start with the logo. We will assume that it is a one-color logo (if your clients have a multicolored logo, they can afford to pay you for more than five minutes of your time). The logo will need to be digitized so that we can apply it as an image map in LightWave. The image will be applied to several different attributes, so it will be in your best interest to take your time to get a nice clean frame grab or scan of the logo. The logo will need some touching up so a paint program will also be required. Of course, you will also need LightWave. If you are using a Toaster or Flyer set-up, you already have everything you need

and can easily complete this in five minutes, and other platforms can wait to start the timer until after the logo is digitized and processed.

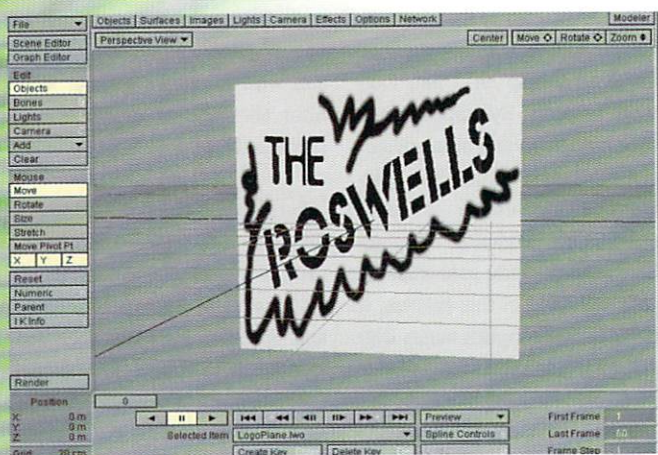
Start the Clock!

The goal is to create a three-second (90-frame) nice-looking flying logo using a single image map and one four-point polygon. The logo needs to appear 3D and cast the appropriate shadows. The logo is very detailed but the job needs to be completed quickly and with economy.

1. Digitize the logo. If you are using a flatbed scanner, scan the logo at a minimum of 150dpi. If you are doing a frame grab, zoom in on the logo to get the biggest picture possible.
2. Process the image map. Take the digitized logo into a paint program. Convert the image into a grayscale image with the logo being 100% black and the background 100% white. Do a flood fill of the background to make sure there are no stray pixels that could get in our way later.



A screen shot of the 1-meter square polygon being created.

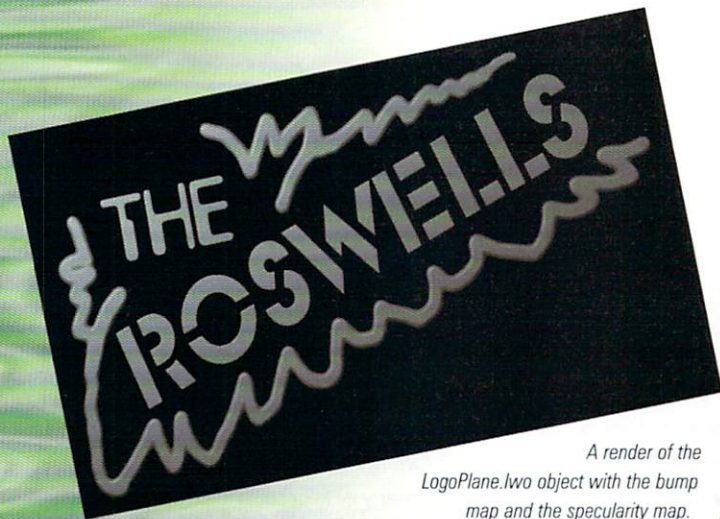


The LogoPlane.lwo object with the LogoImage.iff mapped as a color map for reference purposes viewed with OpenGL.



Layout screen showing the lighting layout for the LogoPlane.lwo object.

3. Crop and Save the image. In your paint program, select an area just a pixel or two larger than the logo, and save it as an image map. Name it "LogoImage.iff" (or TGA, BMP, JPG, whatever image format you like to use, as long as LightWave can read it).
4. Create a one-meter square object. Go to Modeler and select box from the Objects menu. Select the numerical entry and enter the values: -0.5, -0.5, 0.0, and 0.5, 0.5, 0.0. Hit the OK button to return to the Modeler screen. Hit the enter key to create the object.
5. Name and save the polygon. While still in Modeler, select the surface button in the Polygon menu and give the newly created polygon the surface name of "LogoPlane." Save the object as LogoPlane.lwo.
6. Load the object and images into layout. Go to the LightWave Layout screen. In the Objects panel, load the LogoPlane.lwo object you have just created. In the Images panel, load the LogoImage.iff.
7. Surface the Logoplane.lwo (this is the only scary part). We will be applying the logo image to several attributes exactly the same way: by clicking on the texture (T) button next to an attribute and selecting the Planar Image Map texture using the Z-axis option, then clicking on Automatic Sizing. Most of the textures will use a negative image. We will go through them one at a time:
 - 7a. Apply a Bump map. Click on the texture button next to Bump Map, select the LogoImage.iff and the planar map using the Z-axis option, click on automatic sizing. Use the negative image and set the bump level at 100%.
 - 7b. Apply a Specularity map. Set the initial value of Specularity at 0%. Click on the texture button, select the LogoImage.iff image and the planar map using the Z-axis option. Click on automatic sizing. Use the negative image.
 - 7c. Apply a Clip map. In the Objects panel under Appearance Options there is a small T button for clip map. Click on the texture button, select the LogoImage.iff image and the planar map using the Z-axis option, click on automatic sizing. Do not use the negative image.
8. Scale the LogoPlane.lwo object. The LogoPlane.lwo object we created was perfectly square, while chances are that the logo is not. Instead of trying to get the right proportions by adjusting the size values for the image map in each of the attributes we used, we will use a more brute force method of stretching the object. With the LogoPlane.lwo object selected, select the stretch command and squash and stretch the object to the proper proportions. If you are using version 5.5 of LightWave with OpenGL, you can temporarily assign the LogoImage.iff image as a color brush map to use as a visual reference. To insure that our logo plane is of the same proportions as the original image, we will use the highly technical method of doing a test render and holding the original logo up next to the screen to do an eyeball comparison.
9. Set up the motion. Key frame the LogoPlane.lwo object at frame 90 at a slight angle in the center of the camera view. Set the spline control to 1,0,1, so that logo slides in to a smooth stop. At



A render of the LogoPlane.lwo object with the bump map and the specular map.

frame 0 move the LogoPlane.lwo object off screen with a slightly opposite angle and key frame it there. Do a quick wireframe preview to confirm the appropriate path.

10 Set up the lights. In the lighting panel, turn the ambient light level down to 0%. Add two more lights, leave the light types both set to distant. Go to the layout screen. Leave light (1) at its default setting and angle and set light (2) to fill the right side of the logoPlane.lwo object. Angle light (3) to shoot up to fill in the bottom of the LogoPlane.lwo object.

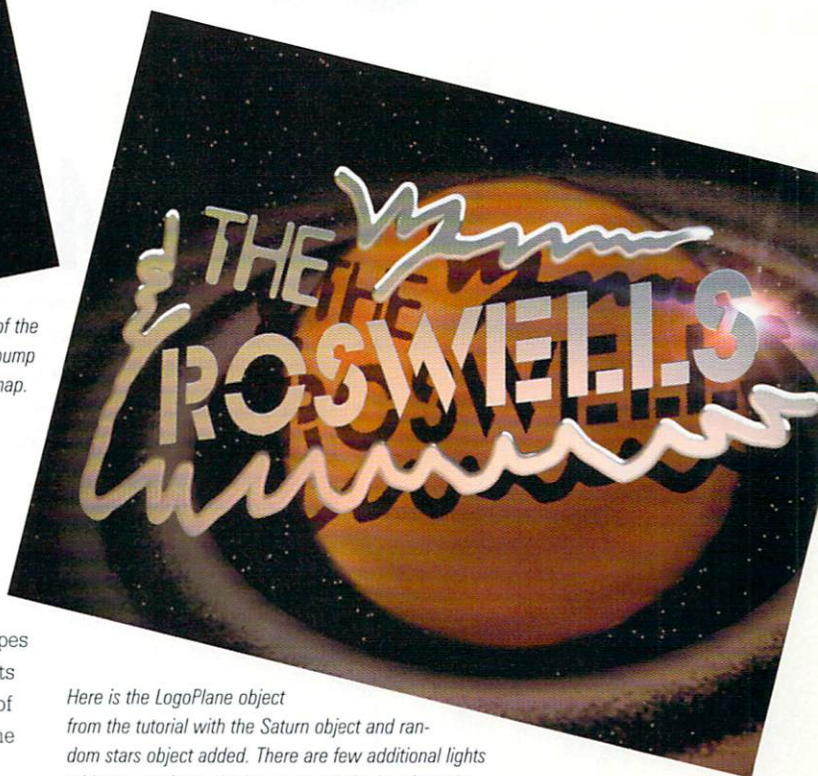
11 Render! Go to the last frame, frame 90, and do a test render.

You should now be looking at bright and partially extruded logo. We left the basic color untouched, so it should still be at the default white. Change the color and glossy settings to suit your personal taste.

This is a remarkably effective technique that can be whipped out quickly yet still offers a little more than a straight ahead DVE-type effect. As the plane rotates in front of the lights, the specular highlights play off the bump maps. If other objects are in the scene, the LogoPlane.lwo object can cast a logo-shaped shadow on them using either shadow mapped or ray traced shadows.

Additional nice touches

The clip map process removes any part of the LogoPlane.lwo object that is mapped with a luminosity value of 51% or greater. To get the clipped area to back off a bit, set the opacity value to less than 100%. If the opacity for a clip map is set at 90%, the clip will occur when the luminosity value is at 71% or more, leaving more of the ridge created by the bump map to be visible. You can substitute transparency mapping for clip mapping. The difference will be that you have a softer transition into transparency but will take longer to render. Transparency mapping will also need ray tracing to cast the proper shadows, whereas clip mapping will cast the proper shadows using the much faster shadow map method. The problem to remember about clip mapping is that clip maps will not



Here is the LogoPlane object from the tutorial with the Saturn object and random stars object added. There are few additional lights with one casting a shadow-mapped shadow from the logo onto the planet.

antialias where transparency maps will.

Another thing that will improve the look of this simple object is to get imaginative with the lighting. Changing the color of the lights to something other than flat white is always a good idea. You can also place a lens flare behind the Logo plane and turn on the fade behind objects option. This helps sell the logo plane as a real 3D object. This would be a good place to apply some volumetric lighting effects.

To change the look of the surface, turn down the diffuse level and turn up the reflectivity. Load one of the images from the Images/reflection drawer and use it as a spherical reflection map. Try it with and without smoothing turned on.

Contest!

Use the methods in the above tutorial to create your own five-minute logo. Use your own settings, background, etc. to personalize it to your taste. When you've completed it, email it to Joe Tracy via jtracy@main.rosenet.net and he'll forward it to the judges. The winning image will appear in *NewTekniques!* For more information on the contest, check out www.newtekexpo.com. Deadline is February 20, 1998.

Patrik Beck is owner of Electric Crayon Studio and a freelance writer. He was recently a teacher at NewTek Expo 1997 and is working on a book, "LightWave Explained." He can be reached at zippie@execpc.com.

Tutorial

A STEP-BY-STEP GUIDE TO CREATING MORE PROFESSIONAL PRODUCTIONS

BY PAUL
LARA

Accessing ARexx to
set font attributes.

Working Faster in TOASTERCG 4.0

One of the finest improvements NewTek provided CG is its ability to access ARexx. This dramatically reduces the amount of time it takes to set font attributes, load fonts, etc. Did you know you have your own customizable road map to many ARexx routines? It's called `cg-config`. Let's accomplish some useful tasks by modifying this text file: Re-assign the buttons on your file requestor, and assign your favorite ARexx macros to their own hot keys.

There are many text attributes in CG, but it seems that you return to one or two that look the nicest. For me, it's a nice white or yellow font. Let's make one, and then automate the process for speed.

1. Enter CG and change to a framestore page type.
2. Click the "+ Font" button on the menu, and load *Olnova Medium* (with a height of 80) from the folder called *PSFonts/B&Pgraphics*.
3. Type the word **HOTKEYS** on screen.
4. Double-click on **HOTKEYS**, selecting the whole word, then go to the **Palette** button above. Set the text face color to pure white: 255,255,255. Text shadow should be black: 0,0,0 with the Alpha slider set to about 100. Set the text border to black: 0,0,0 with the Alpha completely opaque: 255. This gives greater contrast than CG's default settings.
5. Return to the main menu and choose a cast shadow, with an upper-left light source, setting the shadow depth to its shallowest setting, and the

Font border to its thinnest setting. The outline position should be set to **Text Face Only**. If you render out your text, you'll see it looks clean.

6. Let's save it for later recall. Go to CG's ARexx Directory (Alt-F1) and double-click on the file *SaveAttrib.Rexx*. Name it *White.rexx*. We now have this attribute available anytime we need it. But let's make its recall two fingers and three seconds away.
7. Let's load `cg-config` into Ed, Amiga's text editor, by going to **Shell** (in the **Workbench/System** folder) and typing "`ed Toaster/Programs/CG_Support/cg-config.`"

8. You now have a list of all assigned hotkeys and device buttons, with the pound sign used to separate ARexx commands and path locations from comments. The first section is labeled **#Macros**. Do not change the first Rexx: command, `RexxLauncher.Rexx`, because Alt-F1 is the Golden Door to all other macros! Make a simple change here, by replacing the second macro

string, `SaveTextFile.rexx`, with `White.rexx`. Any of these listed macros can be replaced by your favorites.

9. Have you been constantly irritated at CG's repeated "can't find directory" bug (Figure 1)? Well, the bug is inescapable, but we certainly can make our job easier by refining the **#Devices** path. At the bottom, replace the lines

```
DFO #4th button text.
DFO #Where the 4th button goes.
With BKG #4th button text.Toaster:
Framestore #Where the 4th button goes.
```

Now, we have a button that takes us straight to the **Framestore** folder, instead of the seldom-used floppy drive (Figure 2). Save and exit the text file by pressing the **Shell's** close gadget in the upper-left corner, and typing "Y" for yes.

The next time you need to load a background image, simply click on the **BKG** button. Additionally, Alt-F2 quickly changes any selected font to a clean, white font. Print out a list of the keystrokes, and paste it near your monitor for quick access.

Paul Lara, who was a teacher at NewTek Expo 1997, can be reached by email at PLARA@swmail.sw.org.



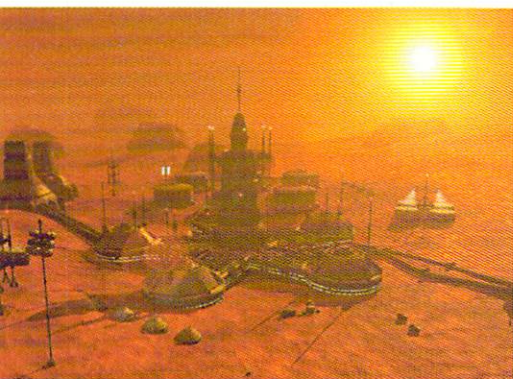
Figure 1



Figure 2

Renders

ARTWORK CONTRIBUTED BY OUR READERS



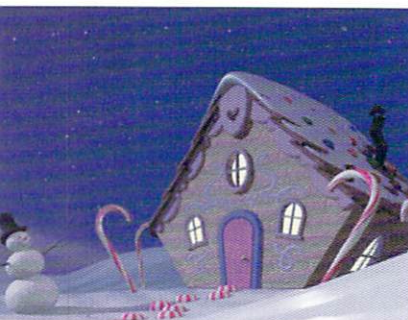
Dan Maas — "Mars Colony"

Software: LightWave 3D 5.0

Description: This Martian mining colony includes a habitation module, communications centers, landing pads, storage tanks, and air processors.

email: dmaas@clarityconnect.com

phone: (607) 347-4590



Richard Natzke — "Santa's Crib"

Software: LightWave 3D 5.0

Description: This image depicts a fanciful scene of Santa's home (a gingerbread house) with Frosty the Snowman standing watch

email: aspiring3D@aol.com



STÉPHANE BELIN — "Fantasy"

Software: LightWave 3D 5.0

Description: Mainly inspired by "Peter Pan" from Walt Disney, I intended here to create some cartoon-like style.

email: sbelin@pressimage.fr



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Jean-Eric Henault — "Honor & Glory - The Titanic's Lobby"

Software: LightWave 3D 5.5 and Photoshop

Description: This is a "work-in-progress" scene of Titanic's Grand Staircase and contains about 300,000 polygons. This version was created in three days. The final version is being created for the special Titanic section on *NewTechniques* Web site at www.newtekexpo.com.

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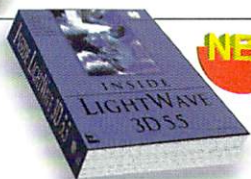
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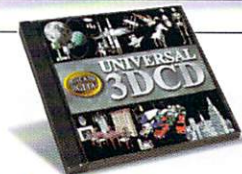


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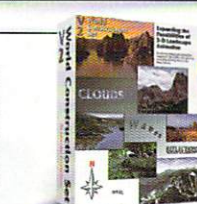
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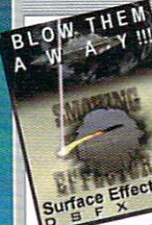
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Panasonic

AG-EZ1

3-CCD Digital Videocassette Camcorder



- Three CCDs with 270,000 pixels each are horizontally staggered for optimum resolution.
- Digital recording system delivers incredible 500 lines of horizontal resolution and virtually no noise. The signal-to-noise ratio is 54dB, an improvement of 6-9 dB over conventional analog systems. This actually represents a S/N ratio 2-3 times better than existing camcorders.
- Audio is also recorded digitally using PCM (Pulse Code Modulation) for quality that rivals CDs. You can choose between two-channel 16-bit recording or two sets of 12-bit stereo, with the second set reserved for uses such as narration.
- Includes a huge 1.5" 180,000 pixel color viewfinder. The viewfinder also tilts 120 degrees vertically for shooting subjects from high or low angles, & its professional size means you don't have to press it against your eye to see the picture.
- Built-in Digital Electronic Image Stabilizer (DEIS) compensates for jittery video and is particularly effective when the digital zoom is employed.
- Equipped with 10.1 power and 20.1 digital zoom lens. Both zooms are adjustable in four speeds (3.5 seconds—15 seconds) based on how hard or soft the zoom toggle is pressed. To set up a shot quickly, a Turbo Zoom function moves from light to wide angle, or vice versa, in under two seconds. For extreme close-ups the lens can focus up to 1/4 inch from the subject.

• Digital Photo-Shot lets you record a still-frame for about six seconds, while audio continues as normal. This feature is great for creating video photo albums or insurance tapes, as 290 still pictures can be recorded on a single 30-minute tape and 580 shots on a 60-minute tape. Using the TopScan feature any shot can be found easily.

JVC

GR-DV1/GR-DVM1

CyberCam Digital Video Camcorders

DIGITAL VIDEO
 The GR-DV1 and GR-DVM1 combine a 570,000 pixel CCD with 4:1 digital component recording to deliver razor sharp pictures with 500 lines of resolution. Digital image stabilizer eliminates camera shake without affecting resolution.

DIGITAL AUDIO
 CD quality audio is now available. Digital audio recording delivers 2 channels at 48kHz (16-bit) sampling for highest quality or four channels at 32kHz (12-bit) when dubbing or mixing is required.

DIGITAL EFFECTS
 A multitude of special effects are possible with the GR-DV1 including wipes, fades, and dissolves. In addition, some specialized effects such as Classic Film, Monotone, Sepia and Strobe, can be recorded in the camcorder or can be played through docking station—even if they weren't originally recorded.

SNAPSHOT/QUICKPIX/ANIMATION
 • Snapshot mode captures still images with a white border around it and even adds a shutter sound effect. In Motor Drive mode multiple snapshots get recorded in rapid succession with an interval of 0.7 seconds between pictures. A Snapshot Search feature lets you put together a video album using captured photos.

• QuickPix or 5-second-record mode automatically records five second clips of video and audio when start button is pressed.

• Animation mode records scenes for just 1/8th of a second each time the start button is pressed. When inanimate objects are recorded with slight changes in position between shots, an animation effect is rendered to the objects making them come alive.

GR-DVM1

Same features as the GR-DV1 except it adds the world's first high-resolution 2.5-inch polycrystalline silicon TFT active matrix monitor. The high-definition 180,000-pixel LCD offers incredible viewing with a horizontal resolution of 400 lines.

DIGITAL ZOOM:
 10X variable speed optical zoom with built-in macro delivers razor sharp images from a distance—or as close as 1.5 cm. A 20X digital zoom and 100X Super Digital zoom allow image capture from tremendous distances while retaining a good degree of sharpness.

USER FRIENDLY MENU SYSTEM
 Zoom rocker control is used to make the different selections as they appear in the color viewfinder so you can pick settings from the menu without taking your eye away from the viewfinder. This design also keeps controls and switches to a minimum.

DOCKING STATION
 Multi-function docking station offers even more sophisticated playback capabilities, plus advanced editing functions:

- R.A. (Random Assembly) editing enables programmed rearrangement of up to 8 scenes at a time—just by marking the beginning and end of scenes.
- Insert editing and 4-channel stereo audio dubbing are possible using the docking station. Video insert allows new video to be inserted over prerecorded segments without disturbing the audio segment. When inserting audio, 16 bit (48kHz) full audio insert replaces recorded audio without disturbing the existing video track. In the 12 bit (32kHz) mode, 2 additional audio tracks can be added to the existing audio and mixed.
- In addition to the five special effects available through the docking station, there are 17 scene transitions that can be selected.

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Panasonic

AG-DP800H UPERCAM S-VHS 3-CCD Digital Signal Processing Camcorder



- Three high-density 380,000 pixel CCDs with half-pitch pixel offset achieves over 750 lines of horizontal resolution, a S/N ratio of 60dB and remarkable sensitivity of 18 at 2000 lux. Additionally the Frame Interlace Transfer (FIT) CCDs minimize vertical smear, so you maintain impressive picture quality even in very bright illumination.
- Digital Signal Processing circuitry provides four valuable benefits:
 - 1) Consistently reliable up-to-spec performance.
 - 2) Fine adjustment of a wide range of parameters.
 - 3) Memory storage and instant recall of specific settings.
 - 4) More flexible and higher quality image processing, as well as easier maintenance.
- Six Scene File modes. There are two user modes for custom digital parameter settings including Horizontal Detail, Vertical Detail, Chroma and Dark Detail, and Color Correction. The four preset modes are normal, fluorescent, special and sparkling.
- In addition to regular AGC (Automatic Gain Control), Supercam has a Super High Gain mode. At F1.4 this enables shooting under illumination as low as 2 lux while retaining detail and color balance.
- Synchro Scan function allows flicker-free shooting of computer monitors. Electronic shutter increments can be set variably from 1/61 seconds to 1/253 of a second.
- Built-in internal time code generator lets you record with SMPTE LTC/VITC (Longitudinal/Vertical Interval) time code.
- Two hi-fi stereo audio channels with a dynamic range of 80 dB, as well as two linear audio channels with Dolby NR. Normal/Hi-Fi recording is selectable. Uses XLR connectors to further ensure high-quality sound.
- Has a 26-pin connector on the back that outputs a composite or component video signal. This enables convenient backup recordings using an additional VCR equipped with a 26 or 14-pin connector.
- Phantom power can be supplied to an optional microphone. Power can be switched off to prevent battery drain when not in use.

JVC

GY-X3 3-CCD S-VHS Camcorder



- By employing professional camera technology in new economical ways, JVC has succeeded in bringing to market a professional 3-CCD camera that breaks all previous price barriers. The new GY-X3 delivers all the performance of a high end 3-CCD camera—high resolution, high sensitivity, low noise and natural color—at an incredible price.
- Features:**
- Three 1/3" CCDs provide a sensitivity of 2000 lux at F8.0, signal-to-noise ratio of 60dB and 650 lines of horizontal resolution.
 - Low light capability allows you to shoot in as little as 4 lux and still have bright pictures with good resolution and strong, vibrant colors.
 - Full Auto Shooting (FAS) mode instantly adjusts to changes in shooting conditions. You can go from bright outdoors to indoor lighting and gain, iris, audio level and color balance will all be automatically adjusted.
 - Variable Scan View allows flicker-free shooting of a computer monitor.
 - Has a built-in 14:1 (5.5-77mm) continuously variable speed zoom lens. The amount of pressure applied to the rocker determines the speed of the zoom. Both the iris and zoom can be controlled manually if desired.
 - Built-in Control Lock (CTL) time code generator as well as a time/date generator. The advanced CTL time code generator has a "scene finder" function that records the identification code each time you start taping. This lets you easily advance to the next or previous scene when using the JVC Edit Desk system.
 - Large high resolution 1.5-inch viewfinder displays comprehensive status indicators.

GY-X2B 3-CCD S-VHS Camcorder



- Newly designed three 1/2" CCD image sensors deliver 750 lines of horizontal resolution & superb signal-to-noise ratio of 62dB
- New micro-lens technology provides exceptional sensitivity of F8.0 at 2000 lux and LOLLUX mode lets you shoot with almost no light! Shoot superb footage with excellent color balance at a mere 1.5 lux
- Variable Scan allows flicker-free shooting of a computer screen
- Quick Record Mode - when turned on the camera is set to the auto iris even if lens is set at manual. Also activated is (ALC) Automatic Level Control and EEI Extended Electronic Iris which provides both variable gain and variable shutter. Now you can shoot continuously from dark room to bright outdoors without having to adjust gain, iris or ND filter.
- Full Time Auto White circuit lets you move from incandescent to fluorescent to outdoor lighting without changing white balance or the filter wheel. Dual output system allows camera output to be connected directly to an external recorder

KY-D29 3-CCD Color Video Camera

One of the most sensitive cameras ever developed, the KY-D29 sets the standard for 3-CCD cameras and is also ideally suited to today's digital recording formats. With a sensitivity F11 at 2,000 lux, the KY-D29 can shoot in light as low as a remarkable 0.35 lux. It also offers a signal-to-noise ratio of 65 dB (with its DNR function on), and delivers 850 lines of horizontal resolution. The exceptional resolution and sensitivity of the KY-D29 are achieved by three new 760,000 pixel 2/3" interline transfer (IT) CCDs, the highest pixel count in the industry.

All-New Digital Signal Processing

Advanced 14-bit Digital Signal Processing (DSP) and 3-dimensional Digital Noise Reduction (3D DNR) circuitry make this camera ideal for acquisition with today's popular digital formats, especially JVC's revolutionary new Digital-S.

DSP within the camera provides astonishingly crisp, high-quality images, while minimizing analog distortions and noise. DSP also makes the camera more flexible and easy to use. It even smooths the transitions between gain and white balance settings so that viewers won't notice sudden changes of settings while the tape is rolling.

Digital signal processing is enhanced with new 3D digital noise reduction circuitry to make it even more practical. By mixing multiple frames to cancel out random noise, then using motion detection to minimize lag, JVC's exclusive 3-D DNR produces dramatic results, far superior to any other DSP camera.

Super LoLux for Extremely Low Light Shooting

Incredible new Super LoLux technology allows you to obtain a broadcast-quality picture in light as low as 0.35 lux. This extraordinary low light capability is the best ever achieved and is made possible by utilizing JVC's exclusive LoLux dual pixel readout technology (increasing gain by 6 dB without introducing noise) while at the same time doubling the pixel readout integration time to 1/30 second.

Versatile Docking Capability

Extremely high quality 4:2:2 digital recordings can be made by docking the KY-D29 to JVC's Digital-S BR-D40 dockable recorder. This digital combo produces recordings far superior to any component analog camcorder, or 4:1:1 digital camcorder. The KY-D29 also docks directly to JVC's BR-DV10 DV-format and BR-S422 S-VHS dockable recorders and can dock to Betacam SP recorders using an adapter.

Features for a Wide Range of Applications

- The KY-D29 is loaded with a wealth of high-performance features, making it ideal for a wide range of broadcast and professional applications. Built-in continuous auto black (CAB) continuously takes a black balance setting, and full-time auto white for continuous compensation of color temperature changes, balance the camera in real time, all the time. This allows you to concentrate on getting the shot, and not on adjusting the camera.
- Because different shooting situations require flexibility, the KY-D29 offers selectable vertical resolution. In the Standard Mode, the camera produces 380 TV lines of vertical resolution. However, in the "V-Plus" high vertical resolution mode, the camera puts out 420 TV lines of vertical resolution, allowing you to increase vertical resolution without sacrificing sensitivity or lag, while maintaining 850 TV lines of horizontal resolution.
- Focusing is easier than ever with Accu-Focus. By momentarily decreasing depth of field, fast & critical focus is achieved instantly.
- Commonly used features can be activated without having to scroll through layers of menus. Features such as shutter control, variable scan, black stretch, black compress, CAB, iris modes, Accu-Focus, DNR and zebra are all menu-free. And for those times when events move so fast it prevents you from making any settings whatsoever, the KY-D29's Full Auto Shooting (FAS) mode controls all of the camera's requiring you control only the focus, zoom and trigger.
- Other camera features include a built-in time/date, built-in zebra level selection switch, an f-stop display in the viewfinder, and a battery remaining display for Anton Bauer battery packs. A special Black Stretch/Black Compression circuit is also included.



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Panasonic AG-1980 S-VHS Hi-Fi Editing VCR

Incorporates advanced digital signal processing and digital noise reduction circuitry to deliver such high picture quality—that it's third-generation picture looks almost as good as first-generation offerings from other VCRs in its class. In addition, the AG-1980 also features a full field digital TBC, insert and assemble editing, Hi-Fi stereo, quick response mechanism and a remote editing terminal.

- Still the only VCR in its class to provide near frame accurate editing. When used with edit controllers from Videoics, FAST and FutureVideo, the AG-1980 achieves an accuracy of ± 2 frames And, the 5-pin edit terminal on the rear panel makes it very easy to set up an editing system.
- Performs all assemble and video insert edits as well as audio video dubbing. Also has independent linear audio input and output for more flexible audio dubbing.
- Hi-Fi stereo audio with a frequency response of 20Hz to 20kHz and a dynamic range of 90dB. It also has Hi-Fi recording level control, headphone monitor terminal with volume control and a mic input terminal.
- Advanced dual-loading mechanism features a quick response time, requiring only 0.5 seconds for a picture to appear from Stop mode and 1.9 seconds from FF/REW.

- Digital Processing:**—Digital Comb Filter using advanced 3-dimensional system provides complete Y/C (luminance/chrominance) separation. This practically eliminates color and luminance blurring.
- Field coefficient Digital Noise Reduction (DNR) circuitry processes the Y and C signals separately, thereby boosting the signal-to-noise ratio and reducing noise during playback.
- Has a built-in full field TBC (Time Base Corrector) that eliminates even the smallest of jitter, skew, head impact error and color blurring. Invaluable for editing, the TBC helps maintain high picture quality even through the third-generation.
- Besides it's digital circuitry, the AG-1980 also features laminated video heads. Clearly superior to heads of conventional ferrite they provide richer, more vibrant color reproduction and a higher signal-to-noise ratio.



AG-DS545/AG-DS555 S-VHS Source Player/ S-VHS Edit Recorder

- Digital Signal Processing for improved picture quality, and for maintaining uniform picture quality during editing. Digital processing circuits include:—Chroma Aperture Compensation (CAC): Eliminates color blurring and expands chroma bandwidth.
- Digital Noise Reduction (DNR): Processes Y/C signals separately to boost S/N Ratio by minimizing noise during playback.
- Digital Comb Filter: Advanced 3-dimensional system for total Y/C separation providing reduced color and luminance blurring.
- Employs amorphous video heads that have a higher magnetic coercivity than conventional ferrite heads. Expanded frequency response from the amorphous heads enhances picture quality by minimizing color longitudinal.
- Built-in LTC/VTC (Longitudinal/Vertical Interval) time code reader/generators for absolute frame accurate editing.
- Two hi-fi stereo channels with a dynamic range of 90dB as well as 2 linear channels with Dolby NR. Each audio channel has its own input (AG-DS555 only) and output with individual channel-level setting capability and XLR connectors.
- Performs audio split editing which lets you set the edit-in and edit-out points separately from those for video.



- 3-dimensional digital TBC provides excellent dropout compensation.
- IQ mechanism delivers precise, high-speed operation. The dual-loading system achieves high-speed response while protecting tapes and heads. The tape transport mechanism uses five direct drive motors, including two reel drive motors.
- Capstan Control System with large capstan spindle allows high-speed search at 32x normal speed (with color picture).
- 3 rack units high, they are compact for easy space saving installation. 19" rack-mountable with optional AG-M730.

WJ-MX20 Digital A/V Mixer

The WJ-MX20 has up to 298 wipes and fades plus RS-422 interface and GPI input for compatibility with a wide variety of editing systems. It also provides an extremely clear picture thanks to a 13.5 MHz sampling frequency, 460 lines of resolution and a signal-to-noise ratio of 50 dB. Other key features include Chroma Key, Scene Grabber and on-screen display settings.

- 5-step field strobe for clear still pictures with adjustable intervals. Field still can be switched to frame-still for increased vertical resolution.
- Field of frame freeze for clear still pictures
- Digital effects include: mosaic (size is adjustable in 5 steps), chroma (saturation levels are adjustable) and negative/positive video reversal



- Wipe Pattern**—Up to 298 wipe patterns can be created from a combination of 23 basic and special patterns

WJ-MX50 Digital A/V Mixer

- Four input switcher and any two sources can be routed to the program buses
- Two-channel digital frame synchronization permits special effects in each A/B bus.
- Combination of 7 basic patterns and other effects creates 287 wipe patterns.
- External edit control input for RS-232 or RS-422 serial controls. Also has GPI input.
- Wipe boundary effects: soft/border (bold, eight background colors available)
- Digital effects: strobe, still, mosaic, negative/positive, paint, monochrome, strobe, trail, and AV synchro
- Real-time compression - entire source image is compressed inside a wipe pattern

- "Scene Grabber" moves a pattern, upholding the initially trimmed-in picture integrity.
- Fade-in and fade-out video, audio, titles individually or synchronously faded.
- Down stream Keyer with selected sources from character generator or external camera.
- Eight memories for instant recall of frequently used effects.
- 8 preset effects include: Mosaic Mix, Position Stream, Corkscrew, Bounce, Flip, Shutter, Vibrate, and Satellite.
- Audio mixing capability of 5 sources with 5 audio level adjustments.



BT-S1360Y 13" Color Video Production Monitor

The BT-S1360Y is a full-function, professional 13" production monitor with a wealth of features. They include: superb 420-line horizontal resolution, S-Video input and output, advanced automatic white balance circuitry, blue-only mode, undercan and pulse-cross. All this, housed in a rugged, rack mountable metal-hybrid cabinet. So, for long-term reliability in any professional application, the BT-S1360Y is the ideal choice.

- Incorporates advanced, proprietary white balance circuitry that stabilizes white balance to provide outstanding picture performance automatically.
- S-Video input and advanced video circuit technology provides a remarkably sharp picture with over 420 lines of horizontal res.
- External sync inputs and outputs provide for synchronization with other equipment fed with the same sync signal.
- Blue Only mode plus Chroma selection provide a monochrome image for fine adjustment of contrast, brightness, chrominance & hue.
- Pulse Cross - displays horizontal and vertical intervals at the center of the screen so you can examine data in the blanking area and also sync/burst timing
- Two sets of video/audio inputs and outputs.

- Underscan - shrinks the scanned area of the picture tube approximately 5% enabling the entire active picture area to be displayed. Lets you detect intruding cameras and make booms.
- Switchable color temperatures of 6500°K (broadcast standard) or 3000°K (for pleasing picture).
- Built-in speaker and headphone jack.
- Rack-mountable with optional BA-131 brackets.



BT-S 1360Y Olympic Demo Special!

We have a limited stock of BT-S1360Y monitors that were used by Panasonic exclusively at the 1996 Olympics in Atlanta. Used only by Panasonic engineers in broadcasting the summer games, these monitors are like new.

Demo Special \$599 (\$400 less than our regular selling price on this monitor)

SONY SVO-2000 S-VHS Hi-Fi Editing VCR

The SVO-2000 is a powerful, yet easy-to-use S-VHS Hi-Fi editing recorder. Two SVO-2000's combined with the optional RM-250 Edit Controller form a cost-efficient cuts-only editing system - with assemble, video insert, audio dub and program editing.



- Superb Video and Audio Performance:**—S-VHS format delivers 400 lines of horizontal resolution and consistent, clear image reproduction for superior editing results.
- Adaptive Picture Control (APC)** for optimum picture. In record mode, APC automatically tests an inserted tape and checks the condition of the video heads. It then adjusts the recording circuitry to capture clear and crisp images. In playback, APC automatically sets the ideal balance of picture sharpness and clarity.
- Hi-Fi stereo recording system has a wide frequency response of 20Hz to 20kHz and a superb 90dB dynamic range, and individual recording level controls for the left and right channels.

Editing Features:

- The SVO-2000 has a Control-Edit 5-pin remote terminal that allows it to be controlled externally. Connects directly to the optional RM-250 for easy setup.
- Control-S input and output terminals allow two SVO-2000s to be connected for synchro editing without the RM-250.
- RM-250 also offers program editing capability, which allows automatic sequential editing of up to 20 pre-assigned scenes.

SVO-2100 S-VHS Editing Recorder

Excellent Audio and Video

- S-VHS format provides excellent picture quality and consistent, clear image reproduction for superior editing results.
- For-channel audio recording. Two-channel Hi-Fi stereo with a superb 90dB dynamic range and a wide frequency response of 20Hz to 20kHz. Plus two editable longitudinal (normal) audio tracks. By using the AUDIO MONITOR selector, longitudinal audio or Hi-Fi audio can be monitored.
- Auto head cleaner removes tape residue preventing head clogging and deterioration of picture quality.
- Continuous auto repeat playback function.

Playback and Recording Functions

- By connecting multiple SVO-2100's via the VIDEO IN connector or THROUGH connector, they can simultaneously record the same program.
- When the Power On Recording or Power On Playback is set, it automatically starts recording or playing back a program the moment the power is supplied from externally connected equipment. This allows unattended automatic VTR operation.

Accurate Editing and Remote Control

- Optional SVBK-10 (RS-232C) Interface Board with LTC time-code reader and generator) allows the SVO-2100 to communicate with external equipment such as computers or Sony's FXE-100/120 editing system.



- When used with a computer, the system can be used to create computer graphics, thanks to the SVBK-10 supporting commands to Number Frame Record and Auto Edit.
- When used with the FXE-100/120, you have a cost effective frame-accurate (LTC timecode) editing system with full Assemble, Insert, Audio Split, A-roll, and A/B-roll editing.
- The SVO-2100 can be operated with an optional foot switch. Recording can be started or stopped from the external foot switch connected to the Foot SW jack of the SVO-2100. During recording, the Rec Tally signal can be output from the Foot SW jack. The Rec Tally signal is useful when used with a monitor with Tally In capability.
- Optional SVRM 100A or RM-V200 Remote Control Unit allows remote control of the SVO-2100's basic functions.

JVC PROFESSIONAL SR-S365U S-VHS Recorder With RS-232 Control

With high-resolution S-VHS, jog/shuttle search and built-in RS-232C interface, the SR-S365U is the foundation of an affordable pro editing system. Convenient functions such as insert/assemble editing and Random Assemble Editing let you produce edited programs right away. And since the SR-S365U is designed for use with the professional RM-8800U Edit Controller, putting together a high-performance editing system with all the benefits of precision CTL time code editing has never been easier.



- S-VHS picture quality with 400 lines of horizontal resolution plus noise reduction circuitry keep pictures clear and sharp.
- With just the RM-8800U and a pair of SR-S365U's, you have the most economical and productive time code editing system available. Edit video independently of the audio, adding new audio later if desired. For faster, more flexible editing, build a mixed system, using the powerful BR-S800U VCR. Either way, you'll get the benefits of CTL time code.
- Two channels of Hi-Fi for dynamic, high-quality stereo sound and an edit/monitor (normal) channel. A new self dubbing function allows you to copy the existing Hi-Fi track onto the normal audio track.

- Built-in time code generator/reader utilizing JVC's CTL Time Code System records time/code data on the control track for fast and accurate access to any frame. Far superior to conventional control track counters that lose reference when the tape is removed from the machine. CTL Time Code can also be post-stripped without sacrificing the audio track.
- Built-in RS232C interface so you can connect it directly to a PC. Compatible with the many RS-232C-based editing controllers available today.
- Other Features**—Flying erase head • Hi-Fi audio recording level controls & indicators • Headphone connector with volume control • Automatic head cleaner • Digital hour meter indication

VES-58 EDIT-DESK S-VHS Editing System

BR-S500U Edit Player • BR-S800U Edit Recorder • RM-8800U Edit Controller

Fast, accurate and professional editing is affordable. Linked via JVC's proprietary control bus, these three units offer all of the editing features professionals have come to expect. The VCRs feature a fast, heavy-duty tape drive and the built-in CTL (Control Track) time code provides unparalleled accuracy and flexibility. Best of all, the VCRs feature an open architecture for easy system upgradability.



SUPERB VIDEO PERFORMANCE

Picture improvement technologies like digital Y/C separation, chroma noise reducer, chroma aperture correction and a 5-line cross-talk cancellation all combine to offer outstanding image quality, even when dubbing down multiple generations.

CONTROL TRACK TIME CODE SYSTEM

JVC's CTL (Control Track) Time Code System records absolute tape address information (hrs: min: sec: frames) on the control track, for fast and accurate access to any frame on the tape - far superior to control track counters that lose reference when the tape is removed. CTL Time Code can also be "post striped" during recording.

FOUR-TRACK AUDIO

Two Hi-Fi stereo channels with a wide frequency response and dynamic range of 80 dB and two linear tracks. The BR-S800's linear tracks can be dubbed independent of each other and of the video - ideal for adding background music or sound effects. There are two audio level meters, switchable between the Hi-Fi and linear channels. Separate input and output terminals are provided.

OPEN ARCHITECTURE

Two plug-in extension slots on the rear panels of both VCRs accept optional expansion boards. To build a PC-based edit system, add the SA-K27UA (RS-232C) board. To use with RS-422-based edit controllers, plug in the SA-K26U (RS-422) card. Other boards include the SA-N50U DNR board with time base stabilizer, and the SA-R50U VITC/LTC time code generator/reader.

RM-8800U EDIT CONTROLLER

- Features automatic assemble and insert editing, audio insert editing, as well as preview/review for checking edits before and after editing, and go to for direct access to any edit point. A capstan bump function is provided to assure greater edit consistency.
- Has two GPIs allowing automatic triggering of special effects generators, switches or audio mixers.
- 8-digit LED counter indicates all edit data in either the TC or CTL mode. Switchable between player and recorder.
- Precise and responsive jog wheel makes it easy to locate any frame and can also be used to enter and trim edit points

RM-G805U A/B ROLL EDIT CONTROLLER



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In the past if you wanted to isolate selected objects in a video sequence for compositing with other video sequences you had two choices. Either you rented a studio and shot hired talent in front of a blue screen or you masked each individual frame by painting over the area that you wanted to protect or cut out. Now wouldn't it be great if there was a tool that automated the process for you—right from your desktop?

AutoMedia AutoMasker

The World's Only Automated Video-Object Masking Tool

AutoMasker is the world's only automated software tool for accurate isolation of items and figures in a video clip. Using intelligent tools that quickly mark the border of an object in a key frame, AutoMasker determines the exact border in subsequent frames even when the object is multi-colored, changing its geometry or moving over a colorful and dynamic background. Using innovative break-through technology, AutoMasker enables automated masking, isolation, painting, extracting and insertion of selected objects into video streams at a fraction of the cost incurred using the conventional frame-by-frame painting method. Selected objects can be modified within AutoMasker or in combination with other digital video effects or compositing software. AutoMasker is very flexible and works on just about any platform - SGI, Windows 95 and NT4.0. It works with standard file formats including: TGA, BMP, QuickTime and AVI. The tools are powerful enough to work accurately, even on fields for precise masking results.

- Greatly increases masking productivity
 - Automates masking of video objects even when they are multi-colored, changing their geometry and moving over colorful and dynamic backgrounds.
 - Easy object selection in first frame and exact boundary tracing in subsequent frames
 - Easy modification to object border and controlled anti-aliasing
 - Independent automatic object and background color effects
 - Simultaneous masking of a number of objects and objects with holes
 - Create mask or colored output movie, including optional alpha channel
 - Compatible with most file formats including TGA, VDA, ICB, VST, AVI, FLV, PCS, DCX
- Results can be used with most third-party applications.



Post-Production System on a Single PCI Card

Based on Pinnacle's EMMY award-winning special effects technology, GeniePlus is a complete desktop post-production system that includes a 3-D DVE, switcher, advanced character generator, fast still-store and a dynamic paint system - at a price you can afford. Equipped with an incredible array of features on a single PCI card, GeniePlus lets you create your own stunning effects, including page turns, water ripples and spheres with uncompromised 4:2:2 internal digital quality. The full-function 3-D DVE provides ultra-smooth motion and no breakup (pixelation) when pictures are sized or rotated. You'll be able to create exciting warp effects with lighting, trails, shadows and borders faster and more easily than ever before.

Switcher/DVE:

- Designed to make your A/B roll editing effortless, the GeniePlus switcher has two live inputs (with built-in frame synchronizers), two full-color frame buffers for use as still-stores, and built-in matte and black generators. Internal linear keying allows multiple layers to be created in a single pass, and Pinnacle's unique Genie Wipes and Alpha Wipes create visually stunning effects.
- Over one hundred effects and transitions that can be customized to instantly add spark and style. These include single-pass page turns, warps, ripples, spheres, trails, shadows and a wide variety of borders. You also have control over lighting and virtually all the controls can be keyframed. Create incredible moves and even use keyframes to have an object track an element on your screen.
- Full spectrum chroma keying with amazing quality. Quickly choose the exact color you want to key out.
- Add warp shapes to the foreground image and deliver high quality never before available at a low price point. New warp shapes including hourglass, hexagon, balloon, diamond, octagon, and bumps.
- Need a hint to float across the screen or title? How about a spot light to enhance the scene? Maybe you need to darken all but a certain part of the screen to point out an element? They are all yours with the new Manual Highlights controls.

Paint:

- Includes the same excellent paint program that ships with Pinnacle's Alladin. It works at DI resolution (720 x 486) and comes with tools optimized for video graphics. Includes a de-flicker filter and also lets you batch convert a sequence of graphics files from different formats and scale them for video use. A pixel interpolation algorithm smooths the enlarged pixels and anti-aliased lines without causing excessive blurring.
- Cursor is invisible. As a result, brush strokes look like animations, and may be used for example to illustrate sports moves, show a itinerary over a map or illustrate weather reports.
- A text buffer lets you use text in a variety of ways. Any font available to Windows can be used for Paint, and text may be scaled, rotated, etc. Effects like shadows and outlines are easily applied and there are many options for the color of the text.

Character Generator:

- GeniePlus comes bundled with Inscribe CG, the standard for character generation. Inscribe supports multiple fonts (TrueType or PostScript), a great variety of text styles, geometric objects, various backgrounds, and different color combinations.
- Styles include a combination of settings such as emboss, glow, shadow, outline, gradient, and transparency.
- Import regular ASCII text files. Adjust text to the screen with automatic horizontal and vertical centering tools. Lines can be automatically aligned, aligned to the right or left, or placed anywhere on screen. Logos can be imported and placed at will, and backgrounds can be comprised of graphics files, solid colors, gradients or live video.
- Variable speed rolls and crawls are possible. The pages are set in Inscribe, and GeniePlus handles the smooth motion. CG pages can be used directly from Inscribe or saved to be used by the DVE. Foreign language special characters are also available.

Other Features:

- Compatible with Windows 95 and Windows NT 4.0.
- Includes GPI control for integration with stand-alone editors. And since most PC-based editing systems offer a direct interface to seamlessly control GeniePlus, you'll can focus on your production, instead of your tools.
- Has connections for six video inputs—three composite and three S-Video—two of which may be switched at a time. (Accepts NTSC or PAL signals). S-Video and composite sources can be mixed. There is also an external sync input with loopthrough. The board processes video in true broadcast quality, conforming to CCIR 601 standards.

TURNKEY GENIEPLUS COMPUTER SYSTEM

INCLUDES: • Pentium 166 MHz CPU • 220 Watt 6-Bay Midtower Case • 3.5" Floppy Drive • 32 MB RAM • 256K Cache RAM • Diamond Stealth3 4MB 32-bit VGA Display Card • Seagate Medalist 2.5 GB IDE Hard Drive • Creative Labs Soundblaster 16 Audio Card • Altec Lansing ACS-51 Amplified Computer Speaker System • Teac BX-Speed Internal EIDE CD-ROM Drive • Focus 2001A Keyboard • Logitech 2-button Mouse • Windows 95 • Princeton E015 High Resolution 15-inch Monitor **plus—card and software installed** **\$649.00**



4-Channel Digital Audio Card for Windows

The next generation in digital audio for the desktop, StudioCard is a premium-quality digital audio adapter with advanced features, studio-quality specs and professional connections. Unmatched in quality, flexibility and expandability, it features 4 tracks of audio sound and real-time digital mixing capability, making it the ideal board for musicians who want digital multitrack recording and mixing on their PC, or producers looking for a versatile board for post-production digital audio editing and uncompromised audio quality. StudioCard is Windows 95 plug and play compatible plus includes drivers for Windows NT as well.

- Key to StudioCard's amazing sound is the marriage of a low noise analog I/O section and high quality A/D and D/A converters. A PCI-based 32-bit memory mapped board, it delivers less than 0.003% total harmonic distortion and 96dB dynamic range. Plus, a PLL-based sample clock generator that can be locked to an assortment of clock sources.
- Incorporates a programmable 32-bit 40 MHz DSP and pro connections like 4 independent balanced analog I/Os (+4dBu or -10 dBV) and AES/EBU or S/PDIF digital I/O. It also offers a MIDI port with deep buffers and time stamping. No matter which type of equipment you have StudioCard will integrate into standard studio environments.

- Compatible with film, video or MIDI. StudioCard offers synchronization via SMPTE, LTC, word and pixel clocks, and composite video. Plus, the StudioCard not only reads SMPTE timecode, but generates it as well.
- Unique to the Antex design is StudioCard's multiple adapter capability. This means you can install multiple StudioCards in a single computer for up to 16-track recording. Start with one StudioCard today - add more StudioCards tomorrow. Also included is an on-board S/PDIF expansion connector for plugging in additional daughterboards for compression or enhanced DSP operations.



TRUEVISION

TARGA1000/2000

PCI Video Capture Boards for Windows and Macintosh

The TARGA 1000 and 2000 are an easy and affordable way to transform your computer into a powerful digital editing system. Along with their high-speed PCI interface, both the TARGA 1000/2000 incorporate all you need to create spectacular multimedia content. They support NTSC and PAL standards and let you capture, edit and playback full-motion, high-resolution digital video with fully synchronized CD-quality audio. Designed for high performance PCs they deliver incredible processing speed for video and audio effects, titling and compositing.

TARGA 1000/2000 PCI for Mac provides a flexible "plug-and-play" solution for video authoring, 3D animation and multimedia applications. Work on animation projects with software like Strata Studio Pro or Specular Infini-D and video or CD-ROM authoring with Adobe Premiere and After Effects 3.0.



Advanced DVR (Digital Video Recording) Technology:

The TARGA 1000/2000 employ advanced DVR technology to deliver superior video performance. Unlike other systems that treat each frame of video as a block of data tied to a specific order of steps such as decompression-resize-compress-write to disk, DVR writes an entire frame of uncompressed video to the huge on-board 20 MB RAM buffer of the TARGA 2000 (8 MB RAM buffer of the 1000). This is a "memory-centric" approach, in which all board functions share access to the video buffer. For example, a DSP (digital signal processing) chip can scan for additional data, such as matching audio samples to video frames to help maintain lip sync. Transitions, filters, effects and/or resizing can also be applied

while the uncompressed frame is in TARGA memory. The final output is then compressed and written to disk. Video data only crosses the bus twice—both times in compressed form. On other systems, the video data path is longer and more complicated. Video crosses the bus—twice uncompressed and twice compressed. The DVR architecture can access information in its memory buffer at a speed of 230MB per second. Video runs only at 2 to 7 MB per second, so the TARGA boards have all the time needed to decide what to do with each frame. And because uncompressed data is never sent across the bus, bottlenecks that plague other systems are eliminated.

TARGA 1000/2000 Features:

- Record and playback video directly to/from hard drive at 50 fields/sec—PAL, 60 fields/sec—NTSC. Video is stored and played back at the highest resolution for each format (768 x 576—PAL, 640 x 480—NTSC). Compression can be adjusted on the fly to optimize for image quality and/or minimum storage space.
- Audio is digitized at 44.1KHz or 48KHz sampling rates, for professional quality stereo sound. Since all audio and video processing is done by on-board DSPs, you are assured of perfectly synchronized sound and images.
- Equipped with composite and S-video inputs/outputs. Also available with component input/output (TARGA 1000 PRO).
- Genlock using separate sync input for working in professional video suites.
- Optimized to work with Windows NT-based software (Adobe Premiere 4.2, iSync Speed-Razor MACH III).

Macintosh version only:

- Video capture plug-in for Adobe Photoshop.
- Quicktime 2.1 compatible, can be used directly out of the box with many applications.

TARGA 2000 Additional Features:

- Accelerated Windows 3.11 and Windows NT 4.0 display drivers offer integrated, true-color (24-bit), non-interlaced desktop up to 1152 x 864 pixels.
- View your desktop and video-in-a-window on your non-interlaced monitor while the processed video is output at NTSC or PAL to a video monitor and/or a VCR.
- Provides a large work area for displaying video, as well as editing application controls. Any part of the display (or even the whole image) can be recorded to tape (video-out-of-a-window).
- Equipped with composite and S-video inputs/outputs. Also available with component input/output (TARGA 2000 PRO).

TARGA 1000 for Windows or Macintosh PCI (specify)	1499.00
TARGA 1000 PRO (Component input/output) for Windows or Macintosh PCI (specify)	1799.00
TARGA 2000 for Windows or Macintosh PCI (specify)	2899.00
TARGA 2000 PRO (Component input/output) for Windows or Macintosh PCI (specify)	3299.00

TARGA and DPS Windows NT Turnkey Systems:

- 220-watt, 6-bay midtower case
- PCI motherboard with 512K pipelined burst cache
- Pentium 166 MHz processor
- Diamond Stealth 3D 3400XL1 4MB VRAM PCI display card (Systems with iSync Speed-Razor MACH 3.5 receive a 9FX Motion 771 4MB VRAM PCI display card).
- 32MB of EDO (Extended Data Out) RAM (Premiere systems only)
- 64MB of EDO RAM (Speed Razor systems only)
- Quantum Fireball 2.5GB IDE system drive
- Seagate (BarraCuda) 4.2GB SCSI-3 Ultra Wide hard drive
- Adaptec AHA-2940UW Ultra Wide SCSI-3 controller card
- MediaTRIX AudioTRIX Pro DSP-equipped 16-bit audio card (for DPS Perception systems only)
- Teac CD-512e 12X EIDE internal CD-ROM drive • 3.5" floppy drive
- Altec-Lansing 300.1 three-piece deluxe speaker system
- Princeton Ultra 17+ high resolution 17-inch multitasking monitor
- Focus 2001A keyboard • Microsoft MS mouse • Windows NT 4.0 operating system software

TARGA 1000/Adobe Premiere 4.2	\$5995	TARGA 2000/Adobe Premiere 4.2	\$7995
TARGA 1000 PRO/Adobe Premiere 4.2	\$6295	TARGA 2000 PRO/Adobe Premiere 4.2	\$8195

- PVR-2500/AD-2500 w/Adobe Premiere 4.2 \$6995
 - PVR-2500/AD-2500 w/iSync Speed-Razor \$7995
- *PVR-2500 System Notes: 1) Does not include Adaptec SCSI-2 controller card (has built-in SCSI-2 port)
2) Includes Seagate BarraCuda 4.2GB Narrow hard drive (doesn't accept Wide Drives)

Expansions and Upgrades for all Systems:

Full Tower Case (10-bay)	add 100.00	Super Tower Case (12-bay)	add 200.00
Pentium Pro 200 MHz processor (256K cache) and Pro motherboard	add 750.00	With 512K cache	add 1200.00
Dual Pentium Pro 200 MHz processor (256K cache) and dual Pro motherboard	add 2000.00		
Seagate BarraCuda 9.1GB Ultra Narrow (for DPS)	add 800.00	Seagate BarraCuda 9.1GB Ultra Wide drive	add 900.00

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18.8GB Raid Array (Single channel with two 9.1GB Ultra-Wide Drives)	4995.00
8.4GB Raid Array (Dual channel with two 4.2GB Ultra-Wide Drives—one drive per channel)	3295.00
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PVR-2500 'Perception'

Digital Video Recorder

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The PVR-2500 offers powerful features for awesome animation, morphing and rotoscoping capabilities. With features like 720 x 480 resolution, 10-bit 2x over-sampled video encoding, better than D1 scaling, component and S-Video outputs, multi-processor support and integrated FAST SCSI-2 controller, it empowers your computer to rival the finest professional production studios.

- The PVR-2500 is a full-length PCI card with a FAST SCSI-2 controller. Because the SCSI controller is integrated with the PVR-2500, video data never has to go over the PCI bus during playback. This avoids the bottlenecks found in systems which use the computer's hard drive for video storage.
- Exclusive multi-format virtual file system ensures complete integration with your application. Any acquired video or computer generated Perception video clips appear simultaneously in many different file formats including TARGA, SGI, BMP and IFF.
- Compatible with LightWave 3D, Softimage, 3D Studio MAX and others. Perception also comes bundled with DPS Lockstep software to provide significant control over 3D Studio MAX.
- 10-bit 2x oversampled encoding for 720 x 480 broadcast quality resolution. Dynamic range is in excess of D1 scaling so images are brighter, have more color and greater spatial resolution than ever before. Component, composite and S-Video outputs are provided via the included breakout cables.



- Runs under Windows NT 4.0 on computers with Pentium, DEC Alpha or MIPS processors. Perception utilizes NT's native support for multitasking and multiple processors, allowing use with the most powerful computers.
- Perception performs real-time interpolation of 30 fps video to 24 fps film rates or vice versa. This means that it is also at home on the Hollywood movie set as well.
- VCR-like controls on the Perception's GUI simplifies the task of batch digitizing and recording. In this mode, the PVR-2500 can read SMPTE time code from the source deck.
- Use with Windows NT compatible sound card while synchronization of audio and video is maintained by the PVR software.
- Use with third party editing software such as Adobe Premier or iSync Speed Razor MACH 3.5. A system equipped with the PVR-2500, AD-2500 capture card, a sound card, editing software & one or more SCSI drives becomes a non-linear editor of unparalleled performance - at an unbeatable price.

FX-2500 Perception Effects Accelerator

The FX-2500 significantly reduces the time required to render complex non-linear transitions. Although it doesn't deliver real-time transitions, it significantly improves the productivity of non-linear editing systems by dramatically speeding up the rendering time for many effects and transitions.

With a stand-alone PVR-2500 a 30 frame dissolve can take minutes to render, even with the fastest PC, because the host CPU processes source frames on a pixel-by-pixel basis. The FX-2500 reduces the waiting time to under 10 seconds.

AD-2500 Component Video Capture Card

Coupled with the AD-2500 live video capture daughter card, the PVR-2500 becomes a broadcast-quality digital disc recorder delivering unsurpassed picture quality.

- Has component, composite and S-Video inputs for real-time recording. Captured video can also be exported as sequential RGB files for rotoscoping and other compositing applications.
- Sophisticated automatic entropy prediction circuit analyzes incoming video and dynamically calculates the optimum amount of compression on a field-by-field basis—even during real-time recording. You also have complete manual control over compression level/quality settings.



Spark is a DV editing system designed exclusively for use with DV camcorders and VCRs. An affordable direct DV editing solution, all you need to edit DV is a properly equipped computer and a DV camcorder. Digital audio and video are transferred from your camcorder to your hard drive in real time, using the supplied FireWire cable. Non-linear editing on the computer is facilitated with the full version of Adobe Premiere 4.2 editing software which is optionally included. Once content is edited, simply transfer back to your DV camcorder using the bi-directional fire wire cable. Since the video signal remains digital from start to finish, there is no generation loss for a finished product which rivals Betacam SP at a fraction of the price!

DV2000U "SPARK" DV Board\$99.95
DV2000 "SPARK" DV Board With Full Version Adobe Premier 4.2\$49.95



in:sync SPEED RAZOR MACH 3.5

Digital Video Editor for Windows NT

The ultimate digital video editing software, Speed-Razor MACH 3.5 edits full screen, 60 fields per second, CCIR 601 broadcast-quality video. Designed for the DPS PVR-2500 and Truevision TARGA series video capture cards, Speed-Razor MACH 3.5 is the fastest and most powerful tool for editing and compositing video clips, animations, stills, music and sound effects.

Speed-Razor features infinite video, audio, transition and effects tracks and comes with Razor Blades—transitions and effects to enhance your production. There are preset tumblers, fades and wipes which you can easily customize and save as new presets. In addition, there are special image effects which are unquestionably the highest quality of any system—analogue or digital. Speed-Razor sports anti-aliased 3D DVEs, an infinite channel chroma keyer and an excellent character generator. Use the included effects or transitions, layer them to create new ones, make your own grayscale bitmaps to use as transitions, or use 3rd party plug-in effects—the flexibility is yours.

COMPOSITING:

- Infinite number of layers of video clips, still and animations can be composited together
- Handles any resolution from Betacam (720 x 480) up to Omnimax film (4000 x 4000)
- Video clips can be combined using an alpha channel, key color transparency, still or traveling mattes

FILE FORMATS:

- Reads and writes AVI files (created by DPS' PAR), PVD files (Perception), DVM files (TARGA 1000 and 2000) and sequences of TARGA files
- Convert files between any of the following formats: ANI, PVD, DVM, AVI, BMP, TGA, FLC, FLI, WAV
- Project-based Library for organizing your work

AUDIO:

- Handles audio up to DAT (48 kHz) quality
- Infinite number of audio tracks for multi-layer audio mixing

There are two user definable resolution modes (thumbnail and final) to facilitate editing. The thumbnail mode allows you to use Speed Razor in the field on a laptop then transfer the project file back at the edit suite and automatically recapture and re-render the entire project at final resolution.

RS-422 control and batch capture module allow you to automate video capture via SMPTE time code, so digitizing video and audio is simple and painless. In fact, with the innovative "Virtual Editing" function you can actually edit your project, complete with effects and transitions—before you've digitized a single frame of video.

EFFECTS:

- Blur (circular, gaussian, fast), tint, brightness adjustment, chroma key, crop, displacement, emboss, freeze frame, glass texture, greyscale, invert, loop, matte, pixelate, repeat fields, scale, transparency, strobe, turn/red/green/blue
- 3D DVE (translates and/or rotates an image in three dimensions on the X, Y and Z axis)
- Sets a color channel to an assignable value
- Titles (full blown CG using any Windows font in any color with automatic drop shadow)
- Sub-pixel rendering for incredibly smooth motion
- Effects can be applied to infinite sources

TRANSITIONS:

- Includes over 100 grayscale image transitions, crossfades, luminance fades, fade to/from black, fade to/from white, push, twist, twist in/out tumblers, flip, turn, scale (zoom)
- Transitions can be applied between infinite inputs

in:sync Speed Razor MACH 3.5 for DPS PVR-2500 and Truevision TARGA Series.....CALL

NEWTEK LIGHTWAVE 3D 5.5

3D Animation Software

Explosive ideas that test the boundaries of 3D animation deserve a program that can realize them in exciting new ways. Creating worlds that no one's ever seen. Creatures that have never walked the Earth. Special effects, games, web sites - all creations that exist only in your mind. Until now.

LightWave 3D gives you an easy way to create the most sophisticated 3D animation imaginable, with formidable capabilities from an incredibly powerful, professional animation system. Its intuitive, complete, easy-to-use layout and modeling system delivers the ultimate in creative control, not to mention flexibility - the likes of which you've never seen. And unparalleled features for modeling, surfacing, lighting and animating are right at your fingertips. LightWave 3D packs a wallop of a punch. Raytracing, motion blur, MetaMotion, inverse kinematics (IK), Bones, field rendering, lens flares, compositing - they're all here. LightWave 3D's OpenGL and QuickDraw3D support mean you can see your creations in real time.

What's more NewTek improved LightWave 3D's anti-aliasing quality by 300 percent over earlier versions they also improved the accuracy of IK, and increased speed by 500 percent. Its robust

plug-in architecture means you can choose feature options that match the way you work. And it's exceptional image quality and throughput make LightWave 3D an ideal choice for special effects in television, film, commercial work, web page development, graphic arts, video games and education. With all of this it's no wonder you can find LightWave 3D in more Hollywood animation suites than any other 3D program. Yet you can get all of LightWave 3D's great features and exceptional performance for a price far more affordable than you dreamed possible. In fact, LightWave 3D costs up to 75 percent less than comparable programs.

It's no use having a great program if you can't run it. So LightWave 3D is available for all of the most popular platforms: Windows 95, Windows NT, Power Macintosh, DEC Alpha, SGI, and Sun Microsystems. Throw in over 40,000 loyal artists who share what they know, and you won't be able to wait to get your hands on LightWave 3D. After all, by giving many 3D designers their start, and moving them from the garage to their own special effects companies, LightWave 3D has changed people's lives.

Open GL Support

- OpenGL or QuickDraw3D supports real-time shaded views and displays many surface attributes. Preview objects as solid or see-through wire frames in the OpenGL preview window.

MetaNURBS

- High-speed matte modeling for mind-boggling creations. LightWave's unique MetaNURBS is an elegant and easy way to model objects by transforming polygonal models to NURBS surfaces in real time. MetaNURBS delivers incredible detail and flexibility, so you can create smooth organic objects even though the model is actually based on polygonal geometry. Modeler lets you switch seamlessly between polygonal modeling and the organic power of NURBS for the best of both worlds.
- Drag and Drop Smooth Scale - designed to help you work with organic models. Both are especially great for MetaNURBS objects. Plus the new extend plug-in gives you added control over the objects you create with MetaNURBS.
- Also incorporates traditional spline-based modeling tools. (Brezier and hand drawn curves automatically converted to polygon surfaces). The spline modeler lets you create any shape you can dream up in incredible detail and lets you endlessly modify your creations - there's nothing you can't create.

Boolean Tools

- Boolean tools to cut, slice and combine objects. With LightWave's Boolean tools, you can create complex shapes quickly and effortlessly. Like spheres or cubes, and create complex shapes quickly and effortlessly.

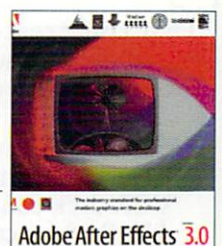
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- Easy-to-use basic style zoom
- Hundreds of polygon modeling tools, including extrude, lathe, bevel, mirror, clone, quantize, jitter and subdivide.
- Postscript and TrueType font compatibility
- Draw freehand shapes or trace over images
- Work among ten different layers
- Multiple view options
- Macros to automate complex functions
- Multiple levels of undo and redo
- Automatic standards - design in metric, English or SI measurement units
- Mathematical functions can be typed directly into numeric requests
- Translator loaders/savers for these formats: 3D Studio, AutoCAD (DXF) and Alias/Wavefront (OBJ).

Adobe AFTER EFFECTS 3.1

Post-Production Tool for Compositing, Motion Graphics and Special Effects on Windows and Macintosh

After Effects 3.1 is the industry standard for professional motion graphics created on Windows-based PCs or Macintosh. It provides the power and breadth of features required by film makers, video producers and editors, graphic designers, multimedia professionals and web developers to produce high-end, unlimited composites, fluid animations, and sophisticated special effects. Available for Macintosh and Windows, After Effects 3.1 is tightly integrated with the Adobe product family, so if you work with Premier, Photoshop, or Illustrator, you already have the skills, shortcut know-how, and hardware to make After Effects a seamless, powerful extension of your creative arsenal. Turn your computer into a motion-graphics studio and put awe-inspiring action into your work.



SOPHISTICATED COMPOSITING:

Combine digitized materials from any source to create sophisticated composites and traveling mattes using transparency, complex masks and alpha channels. Animate Photoshop layers and Adobe Illustrator art with new direct-input capabilities.

SPECIAL EFFECTS:

- After Effects lets you use plug-in effects ranging from precise color correction filters to wipes and blurs, and even Photoshop filters. You can also animate each effect independently over time.

MOTION GRAPHICS:

Position and animate layers with unlimited keyframes and sub-pixel accuracy. View and edit your spline-based motion paths on-screen. Ensure super smooth motion at any speed with field-rendering and true motion blur.

AFFORDABLE QUALITY:

With After Effects you can create anything you can imagine. Get top-quality motion graphics for film, broadcast or CD-ROM—at a fraction of the cost of a dedicated hardware system.

Artel Boris Effects 2.2

A software-based multi-channel DVE generator, complete with intraframe interpolation, matte manipulation, and multiple keyframes. Boris Effects allows you to create your own custom moves. Boris ships with a keyframe library of over 150 customizable effects including cubes, picture-in-picture, chroma keying, tilting, soft edges, masks, filters and compositing of unlimited track of video and graphics. Effects can be saved or used with different video source clips. Easily create 3D flying logo effects from PICT, TIFF, bitmap. Video for Windows and QuickTime files using an embedded alpha channel. Other features include borders and drop shadows which can be colorized and made soft and translucent, control over camera position and light source with specular highlights. Based on a plug-in architecture, Boris is compatible and closely integrates into Adobe Premiere and After Effects, Media 100, and MCXpress, in:sync Speed Razor, FAST VM-Studio Plus and D-Vision Online desktop non-linear editing systems. Once installed in your system, it appears in the transition list and is easily accessed from their transitions and filters menu. It is not a background application and no extra memory is required.



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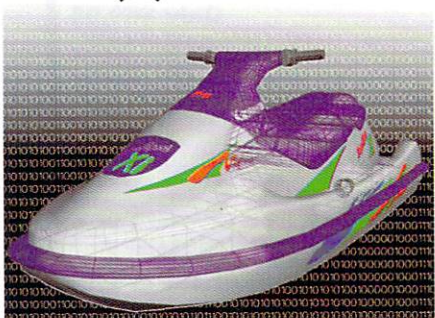
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Washburn University	7	215	www.wacc.edu/ce/index.html	913-231-1010 xtn 1399

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Joe's Digital Bar & Grill	42	194	~	(818) 464-3144
MegageM	6	196	www.megagem.com/a+++.html	(805) 349-1104
One and Only Media	41	193	http://idt.net/~oaomedia	(908) 964-4546
Studio Visions	6	197	www.studiovisions.com	(800) 672-1880
4D Vision Asia	6	199	www.4dvision.com	(800) 252-1024

MOJO

MUSINGS FROM OUR ACE LIGHTWAVE ANIMATOR



The Perspective Disease

Make sure you know what's in the pipe before you smoke it!

Everyone wants to work in Hollywood. The home of endless opportunities to become rich and famous! Full of movie stars and limousines and parties and free drinks and ritzy clothes and fast cars! Who **wouldn't** want to live and work here?

Of course, Hollywood is also home to drug dealers, crack addicts, pimps, prostitutes, murderers, and rapists. Come to think of it, there are just as many reasons to **avoid** this magical place as there are to head for it.

Yet, the mystique is still there. Despite all the back-stabbing horror stories, it still seems to be the American Dream to move to Hollywood and work in the movies; no one is satisfied with other occupations anymore! Doctor? Hah! Keep it. You'd rather **play** a doctor on TV! Lawyer? Maybe. . . but only if you can get one of those famous cases that turns you into a celebrity lawyer! Politics? You **might** consider it if you can get a congressional seat close to one of those C-SPAN cameras.

It seems as if animators are particularly susceptible to the bite of the Hollywood bug. The following case-studies are people who have been bitten and subsequently contracted the "Perspective Disease:"

•A fireman from Florida who makes a good salary and has

excellent benefits, a retirement plan, and a family, wants to move to Hollywood so he can become an animator.

•A dentist with a **Beverly Hills** practice, who makes god-only-knows how much money, wants to commute to Hollywood so he can become an animator.

•A man from Wisconsin, who makes a living using LightWave 3D to produce corporate videos and flying logos, wants to pack up the family truckster and move to Hollywood so he can become an animator.

Your first reaction to these stories might be, "Good for you! Pack those bags and follow your dreams! Nothing ventured nothing gained! Go for it!" However, a more realistic, less starry-eyed response should be "are you out of your fucking mind?!" These people (and probably many of **you** people) are quite comfortable—they've got a happy family, a good career, and a strong future ahead of them. Some make their living with LightWave and some are hobbyists who make a few bucks

on the side with it. Either way, they have a lot to be happy about, yet they're willing to give it all up for a shot at the "big time." Let's take a look at what "big time" really means, shall we?

First of all, very few people start out as "ready-for-prime-time" animators. That level of expertise usually comes from working full-time in an actual production environment so, at best, they could be hired as assistants. Maybe. Perhaps after a year or so they could work their way up to a decent salary. Of course, given the unpredictable nature of the movie and TV business, any number of things can go wrong and they may find themselves out of a job before that day comes. Why? The show could get canceled; a big budget film could flop at the box office, prompting layoffs at FX companies all over town; your boss may get an offer to run another company's LightWave division and you get left behind; a producer decides to hire a better animator and to save money fires you after three days. Don't laugh—all of these things have happened! Did I mention that I have yet to meet an animator with good benefits and a pension plan?

It seems to me as if these people sure have more to lose than to gain. At best, they may get a job

It seems as if animators are particularly susceptible to the bite of the Hollywood bug.

BY MOJO

working for a high-profile project and have their name appear on a movie screen as people are exiting the theater. At worst, they'll lose the shirt off their back and put their family out on the street.

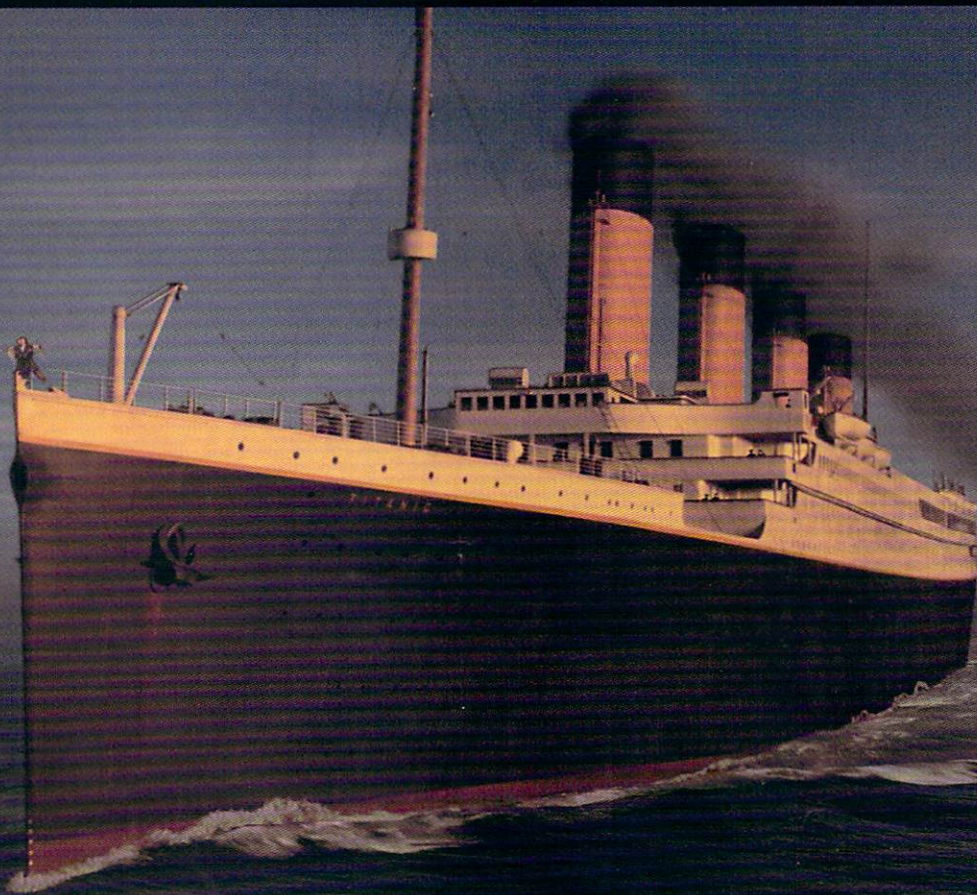
Tough choice, huh?

There's a reason the profile of the average animator is a single, under-30 male. It's because these people don't have a lot of responsibility and can afford to take the risks that are part of trying to make it in Hollywood. If you've got a good thing going and you make money animating, why risk it all on a pipe dream? You should be **thrilled** that you're getting paid to do something you love, no matter where it is! I may be working for "Star Trek," but the glamour of that job ends at the idea of it. In reality, I answer to the wishes of a list of producers and supervisors so long it would make your head spin. It would be great to sit back and be my own boss, charging clients across town insane amounts of money for no-brainer flying logos while I sip tropical drinks and watch MTV. The sad fact is, I'm rarely ever home in time to **watch** "Star Trek," let alone admire the work we do on it.

So do me a favor—put the Hollywood bong down, take two aspirins and don't call me in the morning.

Mojo is a supervising animator at Foundation Imaging.

The Impossible Made Possible



Carrera

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Carrera, The Power Behind the Scenes

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Circle #247

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